IU School of Informatics and Computing

Welcome to the IU School of Informatics and Computing!

Moore's Law says that computing power doubles every 18 months. Regardless of whether that law is literally correct, it illustrates the rapid changes in information technology that will continue for the foreseeable future. The School of Informatics and Computing prepares students to meet the continuing demand for information technology professionals who know how to grow and adapt to this environment of rapid technological change.

Informatics is focused on the best applications of technologies and emphasizes the social and psychological aspects of information technology. Some have called informatics "technology with a human face." Informatics prepares professionals to use information technology to solve problems in a variety of settings. The degrees emphasize the development of new uses for technologies, always keeping in mind the needs of people and the best and most appropriate uses for technology.

Informatics and Computing students have:

- a technical understanding of how computing systems and programs operate
- an ability to adapt/assess and apply new trends in information technology (IT)
- well-developed problem-solving skills
- experience working on a team, such as those formed for the senior capstone experience
- well-developed communications skills to clearly convey solutions and observations to others
- an understanding of social and ethical principles as they relate to IT issues
- the ability to create 3-D animations to help explain surgery to patients
- accelerated drug discovery through information technology
- developed computer applications to manage disaster relief
- explored human interactions with computers, mobile devices, and robots

Informatics is all of this - and so much more. Harnessing the power and possibility of technology, Informatics turns data and information into knowledge that people can use every day. In the world of information and technology, it's the bridge to all things useful. Informatics is the future.

Degrees from the School of Informatics and Computing are unique because they involve students in learning how information technology relates to a traditional discipline in the sciences, liberal arts, or professions. Students of Informatics learn to solve real problems that directly impact our lives and the lives of those around us. They use their technology and problem solving skills to make a difference in the world. For students interested in a career with infinite potential, Informatics stands out as a strong, flexible and dynamic field of study.

The undergraduate curriculum looks at information technology from a balanced perspective. It includes a technical core in the areas of mathematical foundations, distributed information, human-computer interaction, social/organization informatics, and media arts and science. In addition to knowledge of core informatics and of informatics in the context of a traditional discipline, students must take a set of general-education courses to ensure that they can communicate clearly in both written and spoken English, read effectively, and reason quantitatively. They must be able to raise and rationally debate ethical concerns suggested by information technologies and their interactions with other people. Students also must have some knowledge of the world and its peoples, and their cultural, artistic, and scientific achievements. To this end, the general-education requirement exposes students to the arts and humanities, social and historical studies, and the natural sciences.

Graduate program curricula apply information technology to a specific domain. Graduate students in the School of Informatics and Computing study under faculty who are leaders in the areas of bioinformatics, health informatics, human-computer interaction, library science and media arts and science. Students in the School of Informatics and Computing's graduate programs also learn from a community of fellow student visionaries, with classmates who come from all over the world and across disciplines to advance informatics research and build life-long careers.

The School of Informatics and Computing offers a variety of educational programs to meet a variety of needs in the evolving world of information technology:

- Bachelor of Science in Informatics degree
- Bachelor of Science in Health Information Administration
- Bachelor and Master of Science degrees in Media Arts and Science
- Master of Library Science - with options for dual degrees in History (M.A.), Philanthropic Studies (M.A.), Health Informatics (M.A.), Law (J.D.) and Public Management (certificate)
- Professional Master of Science degrees in Bioinformatics, Health Informatics and Human-Computer Interaction
- Undergraduate certificates in Informatics, Medical Coding, Legal Informatics and Human-Computer Interaction, and
- Graduate certificates in Human-Computer Interaction, Clinical Informatics, Informatics for Public Health Professionals, Health Information Management and Exchange, Health Information Security and Health Information Systems Architecture.

The School of Informatics and Computing also offers four innovative, accelerated 5-year B.S./M.S. degree programs in the following areas:

- B.S. Informatics + M.S. Bioinformatics
- B.S. Informatics + M.S. Health Informatics
- B.S. Informatics + M.S. Human-Computer Interaction
- B.S. Media Arts & Science + M.S. Human-Computer Interaction

Last Updated: 2/04/2014

Contact Information

Contact Information

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Overview

Mission Statement
The mission of the Indiana University School of Informatics and Computing is to excel in education, research, and civic engagement in the field of informatics, an integrative discipline which advances knowledge in

1. computing, information, and media technologies;
2. the implications those technologies have for individuals and society; and
3. their application to any field of study adapting to the challenges of the Information Age.

The School of Informatics and Computing fosters a broad and interdisciplinary view of informatics and uses this view to explore and expand knowledge in informatics education and research. Along with the many schools and departments located on the Indiana University Purdue University urban Indianapolis campus, The School of Informatics and Computing is firmly committed to a welcoming environment, a diverse faculty and student body, and to efforts which support Indiana's economic development.

Together with The School of Informatics and Computing of Informatics and Computing at IU Bloomington, The School of Informatics and Computing of Informatics and Computing at Indianapolis (IUPUI) aims to lead the nation in creating a new, broad and interdisciplinary view of informatics and uses this viewpoint as the foundation for three foci:

Education and Research
The School of Informatics and Computing's primary emphasis is in education and research, offering a broad array of B.S., M.S., and Ph.D., programs and a research agenda that emphasizes the breadth of informatics as an interdisciplinary field of study. The School of Informatics and Computing is at the forefront of innovation in education and provides an informatics curriculum which focuses on computing and information technology, while giving equal attention to the complex interactions of technology, individuals, and society. Students of Informatics learn skills which allow them to use computing to solve real human problems in areas such as healthcare, education, poverty, security, and the environment.

Equally important is the fact that Informatics maintains a strong focus on the human use of computing. For example, informatics students build new computing tools and applications while studying how people interact with those technologies and how those technologies shape our relationships, our organizations, and our community. Informatics is a professional school which goes beyond the study of technology in and of itself, to identify, define, and address information problems in a range of disciplines with a variety of technologies and methodologies.

The School of Informatics and Computing also conducts research in a wide range of computing and informatics foundations, applications, and their implications. The School of Informatics and Computing brings a unique perspective that combines information science with a deep understanding of domain-specific areas of research, such as the biological, health, and life sciences, medical and biomedical sciences, cognitive and social sciences, media arts and science, the law and legal domains, business, and human-computer interaction design and usability engineering.

Economic Development and Entrepreneurship
The School of Informatics and Computing is also deeply engaged in the area of economic development and entrepreneurship. In addition to its primary mission in education and research, The School of Informatics and Computing trains well-equipped graduates for a wide range of computing and information technology occupations by placing a special emphasis on:

1. partnering with information technology businesses to address their professional needs in the state of Indiana, and
2. supporting a culture of entrepreneurship for its students, faculty and alumni.

Diversity
The School of Informatics and Computing also fosters an inclusive educational and research culture and environment by:

1. attracting women and under-represented minorities who have a wide range of intellectual interests, talents, and professional goals, and
2. achieving national recognition as an exemplar for diversity.

Bioinformatics

Bioinformatics
Successful applicants to our **Master of Science program in Bioinformatics** must have a strong background in computing, information technology, and biology. You should be able to demonstrate the skills and knowledge required of the undergraduate Informatics degree.

Promising applicants lacking competencies necessary for admission may be allowed to take courses that will satisfy those requirements, as determined by School of Informatics and Computing faculty. Those courses,

however, would not count towards degree or certificate completion.

Prerequisites

- Minimum of a Bachelor's degree *(with demonstrated technical skills)*
- Minimum Overall GPA: 3.0 *(4.0 point scale)*
- Graduate Record Exam (GRE) scores from within the past five years if you are seeking direct financial assistance (such as an assistantship or fellowship) from the School of Informatics and Computing. A GRE score is not required to submit your FAFSA or to seek other federal or private financial assistance opportunities.

Students holding a bachelor's degree in computer science or a related field from an accredited four-year collegiate institution must have completed all or part of the prerequisite courses listed below:

- K322 Genetics and Molecular Biology and K324 Cell Biology or BIOL 507 Molecular Biology

Students holding a bachelor's degree in life sciences or a related field from an accredited four-year collegiate institution must have completed all or part of the prerequisite courses listed below:

- Programming in C, C++, or Java (3 credits)
- Programming/Database (3 credits) (e.g. N510 Web-Database Concepts)
- Statistics (3 credits) (e.g. SPEA K300 or PSY B305)

How to Apply

The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated.

Submit a resume, transcripts, a personal statement, and letters of recommendation to:

Graduate Admissions Committee
School of Informatics and Computing 535 W. Michigan Street, IT 475
Indianapolis, IN 46202

1. Complete and submit the IUPUI Graduate Online Application form. Paper applications are not accepted. Choose "M.S. Informatics" and Bioinformatics in the "Academic Interest" section.
2. Submit a resume listing your education, work, research, honors/awards and computer programming experience. This may be attached to your online application or sent separately.
3. Submit a personal statement (visit the IU Writing Center for instructions on how to write such a statement). This may be attached to your online application or sent separately. Your personal statement should indicate the following:
   - Why you're applying to the program
   - Your post-graduation career plans
4. Submit all official transcripts from previous colleges and universities. *NOTE: we do not require transcripts from Indiana University campuses.*
5. Submit three references from academic instructors and/or employers. To submit references, you will input contact information for each person on your electronic application. The reference will receive a form via email to fill out and submit electronically.
6. Complete the Graduate Record Examination (GRE) and ensure that IUPUI receives your score report from the GRE exam board (when applying for financial support). The Informatics and Computing school code for the GRE is 1325 – enter this code on the exam's answer sheets.
7. Submit English language proficiency exam score (International and non-native English speaking students only – see instructions below).
8. Pay your $60 application fee.

Special Instructions for International Students and Non-native English Speakers

If your native language is not English, submit with your application one of the following official test scores from within the past two years:

- Test of English as a Foreign Language (TOEFL): Minimum required scores: 250 for the computer-based test, 600 for the paper test and 79 for the Internet-based test.
- International English Language Testing System (IELTS): Minimum required score of 6.5 or higher

Use IUPUI School Code 1325 to ensure correct routing of your score to IUPUI.

- The TOEFL may be waived if a B.S. or M.S. degree has been earned in the United States
- If you are in the Indianapolis area, placement into G013 or higher on the IUPUI ESL Placement Test may replace the TOEFL requirement for admission. Test registration is arranged by calling 317-274-4240. You must have submitted your application and received a University ID to be eligible to register for this test.
- If you need additional English language study, you may enroll at the ELS Language Centers intensive English program at IUPUI and successfully complete Level 112. We accept successful completion of ELS 112 in place of a TOEFL report.

Last updated: 02/11/2014

Human-Computer Interaction

Human-Computer Interaction

Successful applicants to our **Master of Science program in Human-Computer Interaction** must have a strong background in computing and information technology. You should be able to demonstrate the skills and knowledge required of the undergraduate Informatics degree.

Promising applicants lacking competencies necessary for admission may be allowed to take courses that will satisfy those requirements, as determined by School of Informatics and Computing faculty. Those courses, however, would not count towards degree or certificate completion.

Prerequisites

- Minimum of a Bachelor's degree *(with demonstrated technical skills)*
- Minimum Overall GPA: 3.0 *(4.0 point scale)*
- Graduate Record Exam (GRE) scores from within the past five years if you are seeking direct financial assistance (such as an assistantship or fellowship)

from the School of Informatics and Computing. A GRE score is not required to submit your FAFSA or to seek other federal or private financial assistance opportunities.

Successful applicants will have a foundation of core knowledge and skills (from either past education or work experience) in one or more of the following proficiency areas:

- *Programming*- Proficiency in programming/scripting, including:
  - One or more languages (e.g., HTML, JAVA, C++ and Visual Basic)
  - A basic understanding of programming methodologies, such as system design and architecture, problem and algorithm analysis
  - Other systems knowledge such as artificial intelligence and database analysis/database technology
- *Design*- Proficiency with the principles and processes of visual communication, industrial design, new media or other disciplines that deal with design theory and practice, including:
  - Knowledge and application of 3D animation and/or modeling tools
  - Design methodologies for 2D and 3D product development
  - Conceptual modeling, prototyping and product delivery
  - Fundamental concepts of visual communication (e.g., page design/layout)
  - Design principles, typography and color theory
  - Knowledge and application of a range of digital (vector and raster) authoring tools for Web or interface design
- *Social Sciences*– Coursework in the following key areas:
  - Psychology (general, cognitive and behavioral)
  - Sociology and anthropology (ethnography)
  - Cross-cultural psychology and communication
  - Information management and/or Information and library science

How to Apply
The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated.

Submit a resume, transcripts, a personal statement, and letters of recommendation to:

Graduate Admissions Committee
School of Informatics and Computing 535 W. Michigan Street, IT 475
Indianapolis, IN 46202

1. Complete and submit the IUPUI Graduate Online Application form. Paper applications are not accepted. Choose “M.S. Informatics” and Human-Computer Interaction in the “Academic Interest” section.
2. Submit a resume listing your education, work, research, honors/awards and computer programming experience. This may be attached to your online application or sent separately.
3. Submit a personal statement (visit the IU Writing Center for instructions on how to write such a statement). This may be attached to your online application or sent separately. Your personal statement should indicate the following:
   - Why you’re applying to the program
   - Your post-graduation career plans
4. Submit all official transcripts from previous colleges and universities. *NOTE: we do not require transcripts from Indiana University campuses.*
5. Submit three references from academic instructors and/or employers. To submit references, you will input contact information for each person on your electronic application. The reference will receive a form via email to fill out and submit electronically.
6. Complete the Graduate Record Examination (GRE) and ensure that IUPUI receives your score report from the GRE exam board (when applying for financial support). The Informatics and Computing school code for the GRE is 1325 – enter this code on the exam’s answer sheets.
7. Submit English language proficiency exam score (International and non-native English speaking students only – see instructions below).
8. Pay your $60 application fee.

Special Instructions for International Students and Non-native English Speakers
If your native language is not English, submit with your application one of the following official test scores from within the past two years:

- Test of English as a Foreign Language (TOEFL): Minimum required scores: 250 for the computer-based test, 600 for the paper test and 79 for the Internet-based test.
- International English Language Testing System (IELTS): Minimum required score of 6.5 or higher

Use IUPUI School Code 1325 to ensure correct routing of your score to IUPUI.

- The TOEFL may be waived if a B.S. or M.S. degree has been earned in the United States
- If you are in the Indianapolis area, placement into G013 or higher on the IUPUI ESL Placement Test may replace the TOEFL requirement for admission. Test registration is arranged by calling 317-274-4240. You must have submitted your application and received a University ID to be eligible to register for this test.
- If you need additional English language study, you may enroll at the ELS Language Centers intensive English program at IUPUI and successfully complete Level 112. We accept successful completion of ELS 112 in place of a TOEFL report.

Last updated: 02/11/2014

Health Informatics

Health Informatics
Promising applicants lacking competencies necessary for admission to our **Master of Science in Health**

Informatics program may be allowed to take courses that will satisfy those requirements, as determined by School of Informatics and Computing faculty. Those courses, however, would not count towards degree or certificate completion.

Prerequisites

- Minimum of a Bachelor's degree in computer science, engineering, biology, biochemistry, nursing, mathematics, statistics, physics, health information administration, or other similar or health-related discipline.
- Successful coursework (or equivalent) in programming (i.e. C, C++, Java or equivalent), databases, medical terminology, human anatomy and physiology.
- Minimum Overall GPA: 3.0 *(4.0 point scale)*
- Graduate Record Exam (GRE) scores from within the past five years if you are seeking direct financial assistance (such as an assistantship or fellowship) from the School of Informatics and Computing. A GRE score is not required to submit your FAFSA or to seek other federal or private financial assistance opportunities.

How to Apply

The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated.

Submit a resume, transcripts, a personal statement, and letters of recommendation to:

Graduate Admissions Committee
School of Informatics and Computing 535 W. Michigan Street, IT 475
Indianapolis, IN 46202

HIT Certificate Graduates

If you have graduated from the HIT certificate within the last year, you may use your previous HIT application materials for the Health Informatics Master's application or submit new materials. This includes your resume/CV, college transcripts (unless a non-IU updated transcript is necessary), personal statement, and letters of reference. If the online application system will NOT let you submit without listing a reference you can put one reference down and inform that person that they do NOT need to respond. Their lack of response will NOT impede your application. Your file will still be complete with the addition of your previous references. Please inform the Health Informatics academic advisor that you would like to use your HIT application materials for this application. Successful completion of the HIT Certificate program does NOT guarantee admission into the Health Informatics Master's program.

1. Complete and submit the IUPUI Graduate Online Application form. Paper applications are not accepted. Choose "M.S. Informatics" and Health Informatics in the "Academic Interest" section.
2. Submit a resume listing your education, work, research, honors/awards and computer programming experience. This may be attached to your online application or sent separately.
3. Submit a personal statement (visit the IU Writing Center for instructions on how to write such a statement). This may be attached to your online application or sent separately. Your personal statement should indicate the following:
   - Why you're applying to the program
   - Your post-graduation career plans
4. Submit all official transcripts from previous colleges and universities. *NOTE: we do not require transcripts from Indiana University campuses.*
5. Submit three references from academic instructors and/or employers. To submit references, you will input contact information for each person on your electronic application. The reference will receive a form via email to fill out and submit electronically.
6. Complete the Graduate Record Examination (GRE) and ensure that IUPUI receives your score report from the GRE exam board (when applying for financial support). The Informatics and Computing school code for the GRE is 1325 – enter this code on the exam's answer sheets.
7. Submit English language proficiency exam score (International and non-native English speaking students only – see instructions below).
8. Pay your $60 application fee.

Special Instructions for International Students and Non-native English Speakers

If your native language is not English, submit with your application one of the following official test scores from within the past two years:

- Test of English as a Foreign Language (TOEFL): Minimum required scores: 250 for the computer-based test, 600 for the paper test and 79 for the Internet-based test.
- International English Language Testing System (IELTS): Minimum required score of 6.5 or higher

Use IUPUI School Code 1325 to ensure correct routing of your score to IUPUI.

- The TOEFL may be waived if a B.S. or M.S. degree has been earned in the United States
- If you are in the Indianapolis area, placement into G013 or higher on the IUPUI ESL Placement Test may replace the TOEFL requirement for admission. Test registration is arranged by calling 317-274-4240. You must have submitted your application and received a University ID to be eligible to register for this test.
- If you need additional English language study, you may enroll at the ELS Language Centers intensive English program at IUPUI and successfully complete Level 112. We accept successful completion of ELS 112 in place of a TOEFL report.

Last updated: 02/11/2014

Master's Program Admissions

Master's Program Admissions

Applications for all graduate certificate and **M.S. programs** must be received by **March 15 for fall admission** and **September 15 for spring admission**.

Applications for admission to the **M.L.S. program** must be received by **July 15 for fall admission, November**

15 for spring admission and by **March 15 for summer admission**.

The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated. Specific application details are available at the program/degree links in the left navigation bar.

Last updated: 02/11/2014

Library Science (M.L.S.)

Library Science (M.L.S.)

The Department of Library and Information Science welcomes applications to our **Masters of Library Science** program from individuals interested in entering the library and information professions. Applicants to the Indianapolis program bring a range of backgrounds to their graduate education, through both their prior education and work experience. Applications from those who have been in the work force and from recent graduates are equally desirable.

Admission Requirements

Bachelor's Degree Students holding a bachelor's degree from regionally accredited four-year collegiate institutions are eligible to apply for admission. Applicants in the final year of their undergraduate program may apply and be granted admission conditional upon being awarded the bachelor's degree.

An applicant must have a minimum grade point average (GPA) of 3.0 on a 4.0 scale or its equivalent in the total undergraduate program, or an average of 3.2 in the latest graduate degree or representative graduate hours (usually 30 semester hours) completed.

If the applicant does not meet the minimum undergraduate (or graduate) GPA requirements, he or she must submit Graduate Record Exam scores.

GRE Revised Test (Nov.2011) – Initial GRE scoring conversion charts are available. These charts may be updated as more student test data is collected by the GRE board.

LIS looks at the whole application in making an admissions decision. The following scores will be considered to have met the minimum required – V: 153, Q: 144, and AW (not decided at this time).

See GRE Score Interpretation.

- GRE – IU Institutional Code: 1324
- GRE – Library Science Code: 4701

How to Apply

The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated.

Have transcripts sent directly to:

Department of Library and Information Science
Indiana University School of Informatics and Computing
535 West Michigan Street, IT 475
Indianapolis, IN 46202

1. Complete and submit the IUPUI Graduate Online Application form. Paper applications are not accepted.
2. Submit a 750 – 1500 word personal statement. Your personal statement should indicate the following:
   - In what manner do you see yourself as a future library/information leader in your future organization and community?
   - What examples can you provide that illustrate how you work as a constructive member of a team to solve problems?
   - Provide your perspective on or experiences with technology in information services.
3. Submit official transcripts from all post-secondary colleges and universities (graduate and undergraduate), except for Indiana University campuses.
4. Submit three references from academic instructors and/or employers. To submit references, you will input contact information for each person on your electronic application. The reference will receive a form via email to fill out and submit electronically.
5. If necessary, complete the Graduate Record Examination (GRE) and ensure that IUPUI receives your score report. The IUPUI and MLS program codes are listed above. The Informatics and Computing school code for the GRE is 1325 – enter this code on the exam's answer sheets.
6. For international and non-native English speaking students, submit English language proficiency exam score (see below).
7. Pay your $60 application fee.

Special Instructions for International Students and Non-native English Speakers

Graduate applicants are expected to have completed the equivalent of a U.S. Bachelor's degree in order to be considered for graduate study, such as:

1. Have completed at least 16 years of primary +secondary+tertiary education and have earned a university first degree, or

2. Have completed a university first degree that grants eligibility for graduate study in a recognized university in that same country.

Persons without this background cannot be accepted for graduate study, regardless of the name of any first degree they may hold.

Once minimum eligibility is determined, Indiana University graduate programs will make the final admissions decision, based on reviewing the applicant's educational credentials to determine if the applicant is academically competitive and has the preparation needed for success in that program. The Office of International Affairs at IUPUI will provide evaluations of the applicant's educational background and academic documents upon request from the departments.

International applicants must submit both GRE and TOEFL (Test of English as a Foreign Language) scores. To gain admission, international applicants must earn minimum scores in the table below.
TOEFL and GRE details:

- TOEFL – TOEFL minimum 600 (Paper test) or 250 (Computer test) or 100 (new test Fall 2005)
- TOEFL – IU Institutional Code: 1325;

International applicants must comply with the deadline dates indicated in Office of International Affairs Web site at www.iupui.edu/~oia.

Last updated: 02/11/2014

Media Arts and Science

Media Arts and Science
Successful applicants to our **Master of Science program in Media Arts and Science** must have a strong background in computing, information technology, and design. You should be able to demonstrate the skills and knowledge required of the undergraduate Informatics degree.

Promising applicants lacking competencies necessary for admission may be allowed to take courses that will satisfy those requirements, as determined by School of Informatics and Computing faculty. Those courses, however, would not count towards degree or certificate completion.

Prerequisites
- Minimum of a Bachelor's degree *(with demonstrated technical skills)*
- Minimum Overall GPA: 3.0 *(4.0 point scale)*
- Graduate Record Exam (GRE) scores from within the past five years if you are seeking direct financial assistance (such as an assistantship or fellowship) from the School of Informatics and Computing. A GRE score is not required to submit your FAFSA or to seek other federal or private financial assistance opportunities.
- Strong background in media arts and science, fine arts, graphic design, computer science, informatics, communication/media studies or film/cultural studies
- Students with backgrounds in the sciences or the humanities are also encouraged to apply if your interest is in developing a multidisciplinary approach to media arts.
- Applicants with background in more visual/graphic/media fields should provide a professional portfolio.
- Applicants without a new media, art or graphic design background should provide samples of academic writing, published papers, software or programs, or any other evidence of scholarship.

How to Apply
The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated.

Submit a resume, transcripts, a personal statement, and letters of recommendation to:

Graduate Admissions Committee
School of Informatics and Computing 535 W. Michigan Street, IT 475
Indianapolis, IN 46202

1. Complete and submit the IUPUI Graduate Online Application form. Paper applications are not accepted. Choose "M.S. Informatics" and Media Arts and Science in the "Academic Interest" section.
2. Submit a resume listing your education, work, research, honors/awards and computer programming experience. This may be attached to your online application or sent separately.
3. Submit a personal statement (visit the IU Writing Center for instructions on how to write such a statement). This may be attached to your online application or sent separately. Your personal statement should indicate the following:
   - Why you're applying to the program
   - Your post-graduation career plans
4. Submit all official transcripts from previous colleges and universities. *NOTE: we do not require transcripts from Indiana University campuses.*
5. Submit three references from academic instructors and/or employers. To submit references, you will input contact information for each person on your electronic application. The reference will receive a form via email to fill out and submit electronically.
6. Applicants with background in visual/graphic/media fields should provide a professional portfolio. Applicants without these backgrounds should provide samples of academic writing, published papers, software or programs developed, or other evidence of scholarship.
7. Complete the Graduate Record Examination (GRE) and ensure that IUPUI receives your score report from the GRE exam board (when applying for financial support). The Informatics and Computing school code for the GRE is 1325 – enter this code on the exam's answer sheets.
8. Submit English language proficiency exam score (International and non-native English speaking students only – see instructions below).
9. Pay your $60 application fee.

Special Instructions for International Students and Non-native English Speakers
If your native language is not English, submit with your application one of the following official test scores from within the past two years:

- Test of English as a Foreign Language (TOEFL): Minimum required scores: 250 for the computer-based test, 600 for the paper test and 79 for the Internet-based test.
- International English Language Testing System (IELTS): Minimum required score of 6.5 or higher

Use IUPUI School Code 1325 to ensure correct routing of your score to IUPUI.

- The TOEFL may be waived if a B.S. or M.S. degree has been earned in the United States
- If you are in the Indianapolis area, placement into G013 or higher on the IUPUI ESL Placement Test may replace the TOEFL requirement for admission. Test registration is arranged by calling 317-274-4240. You must have submitted your application and received a University ID to be eligible to register for this test.
- If you need additional English language study, you may enroll at the ELS Language Centers intensive English program at IUPUI and successfully complete

Level 112. We accept successful completion of ELS 112 in place of a TOEFL report.

Last updated: 02/11/2014

Bioinformatics

Bioinformatics

Successful applicants to our **Ph.D. program in Bioinformatics** must have a strong background in computing, information technology, and biology. You should be able to demonstrate the skills and knowledge required of the undergraduate Informatics degree.

Promising applicants lacking competencies necessary for admission may be allowed to take courses that will satisfy those requirements, as determined by School of Informatics and Computing faculty. Those courses, however, would not count towards degree or certificate completion.

Prerequisites

- Minimum of a Bachelor's degree *(with demonstrated technical skills)*
- Minimum Overall GPA: 3.0 *(4.0 point scale)*
- Graduate Record Exam (GRE) scores from within the past five years.

Students holding a bachelor's degree in computer science or a related field from an accredited four-year collegiate institution must have completed all or part of the prerequisite courses listed below:

- K322 Genetics and Molecular Biology and K324 Cell Biology or BIOL 507 Molecular Biology

Students holding a bachelor's degree in life sciences or a related field from an accredited four-year collegiate institution must have completed all or part of the prerequisite courses listed below:

- Programming in C, C++, or Java (3 credits)
- Programming/Database (3 credits) (e.g. N510 Web-Database Concepts)
- Statistics (3 credits) (e.g. SPEA K300 or PSY B305)

How to Apply

The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated.

Submit a resume, transcripts, a personal statement, and letters of recommendation to:

Graduate Admissions Committee
School of Informatics and Computing 535 W. Michigan Street, IT 475
Indianapolis, IN 46202

1. Complete and submit the IUPUI Graduate Online Application form. Paper applications are not accepted. Choose "Ph.D. Informatics" and "Informatics" in the "Academic Interest" section. Be sure to indicate on your personal statement your intended area of specialization.
2. Submit a resume listing your education, work, research, honors/awards and computer programming experience. This may be attached to your online application or sent separately.
3. Submit a personal statement (visit the IU Writing Center for instructions on how to write such a statement). This may be attached to your online application or sent separately. Your personal statement should indicate the following:
    - Why you're applying to the program
    - Your post-graduation career plans
    - Your intended area of specialization
4. Submit all official transcripts from previous colleges and universities. *NOTE: we do not require transcripts from Indiana University campuses.*
5. Submit three references from academic instructors and/or employers. To submit references, you will input contact information for each person on your electronic application. The reference will receive a form via email to fill out and submit electronically.
6. Complete the Graduate Record Examination (GRE) and ensure that IUPUI receives your score report from the GRE exam board. The Informatics and Computing school code for the GRE is 1325 – enter this code on the exam's answer sheets.
7. Submit English language proficiency exam score (International and non-native English speaking students only – see instructions below).
8. Pay your $60 application fee.

Special Instructions for International Students and Non-native English Speakers

If your native language is not English, submit with your application one of the following official test scores from within the past two years:

- Test of English as a Foreign Language (TOEFL): Minimum required scores: 250 for the computer-based test, 600 for the paper test and 79 for the Internet-based test.
- International English Language Testing System (IELTS): Minimum required score of 6.5 or higher

Use IUPUI School Code 1325 to ensure correct routing of your score to IUPUI.

- The TOEFL may be waived if a B.S. or M.S. degree has been earned in the United States
- If you are in the Indianapolis area, placement into G013 or higher on the IUPUI ESL Placement Test may replace the TOEFL requirement for admission. Test registration is arranged by calling 317-274-4240. You must have submitted your application and received a University ID to be eligible to register for this test.
- If you need additional English language study, you may enroll at the ELS Language Centers intensive English program at IUPUI and successfully complete Level 112. We accept successful completion of ELS 112 in place of a TOEFL report.

Last updated: 02/11/2014

Human-Computer Interaction

Human-Computer Interaction

Successful applicants to our Ph.D. program in **Human-Computer Interaction** must have a strong background in computing and information technology. You should be

able to demonstrate the skills and knowledge required of the undergraduate Informatics degree.

Promising applicants lacking competencies necessary for admission may be allowed to take courses that will satisfy those requirements, as determined by School of Informatics and Computing faculty. Those courses, however, would not count towards degree or certificate completion.

Prerequisites

- Minimum of a Bachelor's degree *(with demonstrated technical skills)*
- Minimum Overall GPA: 3.0 *(4.0 point scale)*
- Graduate Record Exam (GRE) scores from within the past five years if you are seeking direct financial assistance (such as an assistantship or fellowship) from the School of Informatics and Computing. A GRE score is not required to submit your FAFSA or to seek other federal or private financial assistance opportunities.

Successful applicants will have a foundation of core knowledge and skills (from either past education or work experience) in one or more of the following proficiency areas:

- *Programming*- Proficiency in programming/scripting, including:
  - One or more languages (e.g., HTML, JAVA, C++ and Visual Basic)
  - A basic understanding of programming methodologies, such as system design and architecture, problem and algorithm analysis
  - Other systems knowledge such as artificial intelligence and database analysis/database technology
- *Design*- Proficiency with the principles and processes of visual communication, industrial design, new media or other disciplines that deal with design theory and practice, including:
  - Knowledge and application of 3D animation and/or modeling tools
  - Design methodologies for 2D and 3D product development
  - Conceptual modeling, prototyping and product delivery
  - Fundamental concepts of visual communication (e.g., page design/layout)
  - Design principles, typography and color theory
  - Knowledge and application of a range of digital (vector and raster) authoring tools for Web or interface design
- *Social Sciences*– Coursework in the following key areas:
  - Psychology (general, cognitive and behavioral)
  - Sociology and anthropology (ethnography)
  - Cross-cultural psychology and communication
  - Information management and/or Information and library science

How to Apply

The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated.

Submit a resume, transcripts, a personal statement, and letters of recommendation to:

Graduate Admissions Committee
School of Informatics and Computing 535 W. Michigan Street, IT 475
Indianapolis, IN 46202

1. Complete and submit the IUPUI Graduate Online Application form. Paper applications are not accepted. Choose "Ph.D. Informatics" and "Informatics" in the "Academic Interest" section. Be sure to indicate on your personal statement your intended area of specialization.
2. Submit a resume listing your education, work, research, honors/awards and computer programming experience. This may be attached to your online application or sent separately.
3. Submit a personal statement (visit the IU Writing Center for instructions on how to write such a statement). This may be attached to your online application or sent separately. Your personal statement should indicate the following:
   - Why you're applying to the program
   - Your post-graduation career plans
   - Your intended area of specialization
4. Submit all official transcripts from previous colleges and universities. *NOTE: we do not require transcripts from Indiana University campuses.*
5. Submit three references from academic instructors and/or employers. To submit references, you will input contact information for each person on your electronic application. The reference will receive a form via email to fill out and submit electronically.
6. Complete the Graduate Record Examination (GRE) and ensure that IUPUI receives your score report from the GRE exam board. The Informatics and Computing school code for the GRE is 1325 – enter this code on the exam's answer sheets.
7. Submit English language proficiency exam score (International and non-native English speaking students only – see instructions below).
8. Pay your $60 application fee.

Special Instructions for International Students and Non-native English Speakers

If your native language is not English, submit with your application one of the following official test scores from within the past two years:

- Test of English as a Foreign Language (TOEFL): Minimum required scores: 250 for the computer-based test, 600 for the paper test and 79 for the Internet-based test.
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admission. Test registration is arranged by calling 317-274-4240. You must have submitted your application and received a University ID to be eligible to register for this test.
- If you need additional English language study, you may enroll at the ELS Language Centers intensive English program at IUPUI and successfully complete Level 112. We accept successful completion of ELS 112 in place of a TOEFL report.

Last updated: 02/11/2014

Health Informatics

Health Informatics

Promising applicants to the **Ph.D. in Health Informatics program** lacking competencies necessary for admission may be allowed to take courses that will satisfy those requirements, as determined by School of Informatics and Computing faculty. Those courses, however, would not count towards degree or certificate completion.

Prerequisites

- Minimum of a Bachelor's degree in computer science, engineering, biology, biochemistry, nursing, mathematics, statistics, physics, health information administration, or other similar or health-related discipline.
- Successful coursework (or equivalent) in programming (i.e. C, C++, Java or equivalent), databases, medical terminology, human anatomy and physiology.
- Minimum Overall GPA: 3.0 *(4.0 point scale)*
- Graduate Record Exam (GRE) scores from within the past five years.

How to Apply

The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated.

Submit a resume, transcripts, a personal statement, and letters of recommendation to:

Graduate Admissions Committee
School of Informatics and Computing 535 W. Michigan Street, IT 475
Indianapolis, IN 46202

1. Complete and submit the IUPUI Graduate Online Application form. Paper applications are not accepted. Choose "Ph.D. Informatics" and "Informatics" in the "Academic Interest" section. Be sure to indicate on your personal statement your intended area of specialization.
2. Submit a resume listing your education, work, research, honors/awards and computer programming experience. This may be attached to your online application or sent separately.
3. Submit a personal statement (visit the IU Writing Center for instructions on how to write such a statement). This may be attached to your online application or sent separately. Your personal statement should indicate the following:
    - Why you're applying to the program
    - Your post-graduation career plans
    - Your intended area of specialization
4. Submit all official transcripts from previous colleges and universities. *NOTE: we do not require transcripts from Indiana University campuses.*
5. Submit three references from academic instructors and/or employers. To submit references, you will input contact information for each person on your electronic application. The reference will receive a form via email to fill out and submit electronically.
6. Complete the Graduate Record Examination (GRE) and ensure that IUPUI receives your score report from the GRE exam board. The Informatics and Computing school code for the GRE is 1325 – enter this code on the exam's answer sheets.
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- If you need additional English language study, you may enroll at the ELS Language Centers intensive English program at IUPUI and successfully complete Level 112. We accept successful completion of ELS 112 in place of a TOEFL report.

Last updated: 02/11/2014

PhD Programs

Ph.D. Programs Admission

Applicants to the **Ph.D. program** are only eligible for fall admission and must submit applications by **January 15**.

The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated. Specific application details are available at the program/degree links in the left navigation bar.

Last updated: 02/11/2014

Graduate Admissions

Graduate Admissions
Applications for all graduate certificate and **M.S. programs** must be received by **March 15 for fall admission** and **September 15 for spring admission**.

Applications for admission to the **M.L.S. program** must be received by **July 15 for fall admission, November 15 for spring admission** and by **March 15 for summer admission**.

Applicants to the **Ph.D. program** are only eligible for fall admission and must submit applications by **January 15**.

The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated. Specific application details are available at the program/degree links in the left navigation bar.

Last updated: 02/11/2014

Admission

How to Apply: Current IUPUI Students
If you are an IUPUI student not currently enrolled in the School of Informatics and Computing, but would like to pursue a Media Arts and Science, Informatics or Health Information Administration degree, please schedule an appointment to speak with one of our advisors who can help evaluate your situation and guide you through the process.

Current School of Informatics and Computing Students
If you would like to change your major within the School of Informatics and Computing, please schedule a time to meet with your advisor to discuss your options.

Admission

How to Apply: B.S. Health Information Administration Admissions
Students may begin the HIA Professional Program in either the fall or spring semester. Students must have all of their pre-requisite courses completed prior to starting the professional program and apply during the semester prior to their anticipated start date. Completed applications should be emailed directly to the Academic Advisor, Julie Reagan at jdreagan@iupui.edu.

Admissions Requirements and Standards
Completion of all required prerequisite courses with a grade of C or higher (C- grades are not acceptable).

A minimum IU cumulative GPA of 2.5 or higher is needed. You may complete the “Petition for Exceptional Consideration” found on the HIA application if you do not meet this requirement but still feel equipped to succeed in the HIA program. Students who seek exceptional consideration may be asked to schedule an interview. You will be contacted if this is necessary.

Note: Students looking to begin work towards the Health Information Administration degree and who have not yet been admitted to IUPUI or the School of Informatics and Computing should choose the appropriate category from the menu provided here to find out how to apply.

Note for transfer students: Transfer students who have completed HIA professional program prerequisites through another institution must first apply and be admitted to IUPUI before being considered for admission in the professional program.

Admission

How to Apply: High School and First-Time College Students
You’ll actually apply for admission online through the IUPUI Office of Admissions. We encourage you to apply for **direct admission**, which allows you to enter IUPUI as a School of Informatics and Computing student your very first semester. To pursue direct admission, you must list your intended major (B.S. in Media Arts and Science, Informatics or Health Information Administration) or certificates (Medical Coding, Legal Informatics, Human Computer Interaction) on your IUPUI admissions application and meet eligibility criteria.

Another option is to start in IUPUI’s University College, where you’ll begin taking courses, declare your major and then certify into the School of Informatics and Computing early in your college career. But that doesn’t stop you from immediately joining one of our student groups, meeting with our advisors and becoming part of the informatics community.

Visit IUPUI’s Office of Admissions to begin your application or check your admission status.

Requirements
Please make sure to review IUPUI’s admission requirements through the Office of Admissions.

For **direct admission**, we’re looking for students with:

- Competitive grades and class rank
- Strong SAT or ACT scores
- Commitment to a career in computing and information technology

To certify into the School of Informatics and Computing from University College, you will need to have achieved the following:

- 2.0 GPA
- 12 credits of completed coursework

Admission

Undergraduate Admissions
We want to do everything we can to make becoming part of the School of Informatics and Computing family as simple and convenient as possible. Please choose the category below that applies to you to learn more about the admissions process.

- High School or First-time College Students
- Transfer Students
- Returning Students
- International Students
- Current IUPUI Students

- Health Information Administration Professional Program Applicants (current IUPUI students only)

Deadlines for undergradutate admission applications can be found at IUPUI's Office of Undergraduate Admissions.

Graduate Admissions
Applications for all graduate certificate and **M.S. programs** must be received by **March 15 for fall admission** and **September 15 for spring admission**.

Applications for admission to the **M.L.S. program** must be received by **July 15 for fall admission, November 15 for spring admission** and by **March 15 for summer admission**.

Applicants to the **Ph.D. program** are only eligible for fall admission and must submit applications by **January 15**.

The Graduate Admissions Committee will not review applications until the application fee and all required materials are completed and received by the deadlines indicated. Specific application details for each graduate program are available in the links located on the left navigation bar.

Last updated: 02/13/2014

Admission

How to Apply: International Students
International students wishing to enroll at the School of Informatics and Computing must first apply through the Office of International Affairs.

Further information about international admissions, including details about the many scholarships available to international students, are available through the Office of International Affairs. They offer a wealth of information in multiple languages, including Spanish, Portuguese, Arabic and Chinese.

Requirements
The Office of International Affairs maintains its own requirements for international students seeking admission to IUPUI. Please visit their site to review those requirements, including English proficiency standards and what academic records and immigration documentation you will need to provide.

Admission

How to Apply: Returning Students
Welcome home! No matter how long you've been away, it's never too late to finish your education.

If less than two semesters have passed since you left (with the exception of summer terms), please contact your academic advisor.

If you haven't enrolled in IUPUI courses for one year or more, you will need to reapply (admission fee waived) through the IUPUI Office of Admissions.

If you are a previous student of the School of Informatics and Computing applying for readmission, please be aware of potential curricula changes. If you've been gone less than two years, you will return to your original program curriculum. If it's been two or more years, you will be readmitted under the current curriculum.

Returning students new to the School of Informatics and Computing are invited to apply for admission.

Requirements
Returning students are assessed on a case-by-case basis depending upon past credits, transcripts and desired course of study. If you've been away from IUPUI for two or more semesters, we encourage you to complete the reapplication process so that your situation can be reviewed by the IUPUI Office of Admissions and the School of Informatics and Computing.

Admission

How to Apply: Transfer Students
So you want to transfer to IUPUI and the School of Informatics and Computing? We have to say, you've made an excellent choice!

The IUPUI Office of Admissions' Transfer Central will tell you all you need to know.

- If you are transferring from another campus of Indiana University, please review the intercampus transfer process.
- If you are transferring from a college or university other than Indiana University, follow these important instructions.
- If you are an IUPUI student wishing to change majors, please see the current IUPUI Students page.

TransferIN is a good source to determine how your credits may transfer to IUPUI from other Indiana schools, or you may contact one of our advisors. If transferring from an out-of-state school, IUPUI recommends u.select. And don't forget to review IUPUI's Transfer Credit Policy.

Transfer Student Information Sessions
We strongly encourage any prospective transfer students from ANY undergraduate program/school (including IUPUI) to attend one of our regularly scheduled transfer student information sessions. Our advisors will provide a comprehensive overview of the transfer process for the School of Informatics and Computing, including how your existing credits fit into our program curricula and what courses we recommend you take in future semesters.

Check out our undergraduate "Visit Us" page for upcoming dates and to sign up.

Requirements
Your application will be evaluated by the IUPUI Office of Admissions according to IUPUI's transfer admission requirements. It will then be forwarded to the School of Informatics and Computing for review, at which point one of our advisors will contact you for a consultation and recommendations.

Last updated: 02/13/2014

Graduate Academic Regulations

Graduate Academic Regulations
In addition to the many topics covered below, students enrolled in the School of Informatics and Computing's graduate programs are encouraged to review the **MS** and **PhD** student handbooks.

Applicability of Degree Requirements

Students may choose to complete either the specific degree requirements published in the appropriate bulletin at the time of entry into the university or those in the bulletin current at the time of graduation.

Residency Requirements
The campus at which a student is admitted will certify and award the degree.

Intercampus Transfer
Students enrolled in the School of Informatics at any campus of Indiana University may transfer to the School of Informatics on another campus, provided they are in good standing. However, international students may need to pay a processing fee.

Transfer of Credit
A maximum of 8 credit hours of graduate course work with grades of B (3.0) or higher may be transferred from other accredited colleges and universities and applied to the School of Informatics degree programs. The transfer must be approved by the dean, and is not an automatic occurrence.

Revalidation
Normally, a course may not be counted toward degree requirements if it has been completed more than five years prior to the awarding of the degree for master's students. The advisor may recommend to the dean that course work taken prior to the deadline be revalidated if it can be demonstrated that the knowledge contained in the course(s) remains current. Currency of knowledge may be demonstrated by: (a) passing an examination specifically on the material covered by the course; (b) passing a more advanced course in the same subject area; (c) passing a comprehensive examination in which the student demonstrates substantial knowledge of the content of the course; or (d) publishing scholarly research demonstrating knowledge of the content of the course. Courses taken while an undergraduate and counted toward the requirements of a baccalaureate degree may not also be counted toward a graduate degree.

Grading System
The official grading system is as follows:

A	4.0
A–	3.7
B+	3.3
B	3.0
B–	2.7
C+	2.3
C	2.0
C–	1.7
D+	1.3
D	1.0
D-	0.7
F	0 - Failed
I	Incomplete
R	Deferred
NR	No Grade Reported

A minimum of a B (3.0) average in graduate work is required for continuance in graduate study. Courses completed with grades below C (2.0) are not counted toward degree requirements, but such grades will be counted in calculating a student's grade point average. Note that no work may be transferred from another institution unless the grade is B (3.0) or higher.

Incomplete
A grade of Incomplete may be given only if the completed portion of a student's work is of passing quality. It is the responsibility of the student to satisfy the requirements of that course within one calendar year from the date on which the Incomplete is recorded. The student is expected to finish all necessary work in time for the instructor to assign a regular grade before the expiration of this time period. If the student is unable to do so, it is the student's responsibility to notify the instructor of the course and the graduate advisor within the year to request an extension of time. Every overdue Incomplete will be changed to a grade of F after one calendar year.

Withdrawals
Because deadlines for withdrawal from courses may vary by campus and/or school, students should check with the current campus Schedule of Classes to verify deadlines and procedures.

Course Waivers
Requests for waivers of specific courses or requirements on the basis of previous course work are to be submitted in writing to the dean.

Credit Earned in Nondegree Status
Not more than 9 hours of graduate credit completed as a nondegree student may be credited toward a School of Informatics graduate degree. Deficiency courses do not apply to the 9 credit hours.

Academic Standing
Students are considered to be in good standing during any semester in which their academic grade point average is at least 3.0 (B) for both their last semester's course work and for the cumulative average of all course work completed. Only courses with grades of C (2.0) or above may be counted toward degree requirements. However, grades below C are used in computing the cumulative grade point average, even if a course is repeated and a higher grade is earned.

Academic Probation
Students are placed on probation following a semester in which their graduate cumulative or semester grade point average falls below 3.0. Students on probation are required to attain an average of at least 3.0 for all graduate course work completed by the end of the next semester of full-time enrollment or its equivalent (9 credit hours). Failure to do so is cause for dismissal.

Academic Integrity
Academic integrity requires that students take credit only for their own ideas and efforts. Misconduct, including cheating, fabrication, plagiarism, interference, or facilitating academic dishonesty, is prohibited because it undermines the bonds of trust and cooperation among members of this community and between us and those who may depend on our knowledge and integrity. Complete details are contained in the Indiana University Code of Student Rights, Responsibilities and Conduct.

Thesis
Depending on particular degree requirements, students will complete either a capstone project or a thesis under

the guidance of an advisor. More details are given in the appropriate section for each program.

Degree Conferral
For all students seeking a master's degree, an application for the degree must be filed with the School of Informatics at least 60 days before the date anticipated for degree conferral. All degree requirements must be completed at least 30 days prior to the date of expected degree conferral, including submission of the bound copies of the master's thesis (if required for degree).

Time Requirements
All requirements for M.S. degrees must be met within five consecutive calendar years from the date of completion of the first credited (i.e., nondeficiency) course.

Last updated: 02/11/2014

Academic Policies & Procedures

Absences

From Final Examinations
Students are required to adhere to the policies regarding final examinations as published in the *Schedule of Classes*.

From Scheduled Classes
Illness or equivalent distress is the only acceptable excuse for absence from class. Other absences must be explained to the satisfaction of the instructor, who will decide whether omitted work may be made up.

Credit for Correspondence Courses
With prior approval, the School of Informatics will accept a maximum of two courses (6 credit hours total) by correspondence study to count toward the degree requirements. Only general elective courses may be taken by correspondence. Distance learning courses and courses conducted online are not considered correspondence courses and, therefore, do not have a credit hour limit associated with them.

Degree Application
Candidates for graduation must file an application with the school by March 1 for December graduation and October 1 for May, June, or August graduation. Credits for all course work, except that of the current semester, must be recorded on the candidate's Indiana University transcript at least one month prior to the date of graduation.

Statute of Limitations
Candidates for the bachelor's degree in informatics have the right to complete the degree requirements specified by the bulletin in effect at the time they entered Indiana University, provided that the required courses are available and that no more than eight calendar years have elapsed since the date of entry.

Grading Policies
The School of Informatics follows the official grading system of Indiana University described in the front of this bulletin.

Pass/Fail
During an undergraduate program, students in the School of Informatics in good standing (not on probation) may enroll in up to a maximum of eight university elective courses to be taken with a grade of P (pass) or F (fail). Students may take up to two Pass/Fail courses during an academic year. The procedure for declaring this option may be found in the Schedule of Classes. A grade of P is not counted in the grade point average; a grade of F is included. Grades of P cannot be changed to any other letter grade.

Probation/Dismissal/Readmission for Undergraduate Students of the IU School of Informatics and Computing

Academic Warning
A student whose semester (fall or spring) grade point average (GPA) falls below a 2.0, but whose cumulative GPA is a 2.0 or higher will be placed on academic warning. An advising hold will be placed on the student's record and the student will be required to meet with their academic advisor prior to registration.

Academic Probation
A student whose cumulative grade point average (CGPA) falls below a 2.0 or has two consecutive semesters (fall and spring) with a GPA below a 2.0 will be placed on probation for the subsequent semester. A probation hold will be placed on the student's record and the student will be required to meet with their academic advisor prior to registration. Probation will be removed if the cumulative GPA reaches 2.0 or higher or if the semester GPA reaches 2.0 or higher, if the cumulative GPA is already at 2.0 or higher.

Dismissal
A student on probation who has completed a minimum of 12 IU GPA hours is subject to dismissal upon failing to attain a GPA of at least 2.0 in any two consecutive semesters (fall and spring) and the student's cumulative IU GPA is below 2.0.

First--#Semester Student Dismissal
A first--#semester student who has attempted a minimum of 12 IU GPA hours is subject to dismissal upon failing to attain a GPA of at least 1.0 in the student's first semester in the School of Informatics and Computing.

Readmission
Students who are dismissed for the first time must sit out for a minimum of one regular (fall or spring) semester and petition by the established deadlines to be eligible for readmission. Students dismissed two or more times must remain out of school for two regular (fall and spring) semesters and petition by the established deadlines to be eligible for readmission. Readmitted students may only begin in either the fall or spring semester.

Grade Replacement
The Grade Replacement Policy is available only to undergraduate students. It may be exercised for a maximum of 15 credit hours, no more than two times for a given course, with each attempted replacement counting toward the 15 credit hour limit. Any grade may be replaced with the last grade earned for the course, as long as the most recent grade is equal to or higher than the grade being replaced. The replaced grade will then be excluded from the cumulative grade point average. However, the course listing and the replaced grade will

remain on the student's academic record with an "X" notation indicating that the grade is excluded from the cumulative grade point average.

The policy became effective beginning with the fall 1996 semester, and any courses being used to replace an earlier grade must have been taken in the fall of 1996 or later. Grades previously granted FX will be honored and will count toward the 15 credit hour limit. Once invoked, a student may not subsequently request reversal of the grade replacement granted for a given course. Also, this policy is not available for graduate students or students seeking any second undergraduate degree. Please see your academic advisor to discuss grade replacement and obtain a form. For more information about the policy, visit http://registrar.iupui.edu/replace.html

Human-Computer Interaction Certificate

Human-Computer Interaction Certificate
If you have an interest in how people interact with technology or computers, or you like design, psychology, sociology, or any number of additional fields that HCI intersects with, HCI could be a good fit.

HCI is the branch of informatics that studies and supports the design, development, and implementation of humanly usable and socially acceptable information technologies.

Because human–computer interaction studies a human and a machine in conjunction, it draws from supporting knowledge on both the machine and the human side. On the machine side, techniques in computer graphics, operating systems, programming languages, and development environments are relevant. On the human side, communication theory, graphic and industrial design disciplines, linguistics, social sciences, cognitive psychology, and human factors such as computer user satisfaction are relevant

Due to the multidisciplinary nature of HCI, people with different backgrounds contribute to its success.

Certificate Requirements
The Undergraduate Certificate in Human-Computer Interaction (HCI) is a 15-credit-hour program allowing students to become certified in the fundamental theory and application of human-computer interaction. Students can seek this certificate in addition to their major or as a stand-alone certificate.

- **INFO I270 Introduction to HCI Principles & Practices**
- **INFO I275 Introduction to HCI Theory**
- INFO I300 Human-Computer Interaction
- INFO I480 Experience Design and Evaluation of Ubiquitous Computing
- NEWM N450 Usability Principles for New Media Interfaces

Note: courses marked in bold can be counted towards a student's general education requirement.

Last updated: 02/14/2014

Undergraduate Certificate Programs

Undergraduate Certificate Programs
Prior to each semester's enrollment, a faculty member or an academic advisor provides academic counseling for each student in the School of Informatics and Computing. Although academic counseling is intended to provide effective guidance, students are responsible for planning their own programs and for meeting the following degree requirements for graduation.

Students are advised to read bulletin descriptions of all courses selected, paying careful attention to conditions concerning awarding of credit.

The School of Informatics and Computing offers the following undergraduate certificates:

- Informatics
- Medical Coding
- Human-Computer Interaction
- Legal Informatics

Last updated: 02/14/2014

Informatics Certificate

Informatics Certificate
The undergraduate Informatics Certificate is a 27-credit-hour program allowing a student majoring in another subject to become certified in the application of informatics tools and principles to that subject area.

Students must earn a C- or higher in each individual course as well as a cumulative grade point average of a 2.0 or higher in order to graduate.

Courses (24 cr.)
- **INFO I101 Introduction to Informatics (4 cr.)**
- **INFO I202 Social Informatics (3 cr.)**
- INFO I210 Information Infrastructure I (4 cr.)
- INFO I211 Information Infrastructure II (4 cr.)
- INFO I300 Human-Computer Interaction (3 cr.)
- INFO I303 Organizational Informatics (3 cr.)
- INFO I308 Information Representation (3 cr.)

Note: courses marked in bold can be counted towards a student's general education requirement.

Elective (3 cr.)
An additional course from the undergraduate Informatics degree program curriculum must be completed. Or you may choose any course from that same program's list of approved electives, including approved courses outside the School of Informatics and Computing.

Last updated: 02/14/2014

Legal Informatics Certificate

Legal Informatics Certificate
Legal Informatics has been described as "the study of the application of information technologies to the field of law and the use of these technologies by legal professionals." Therefore, the focus of the Certificate in Legal Informatics

is on the effective use of cutting-edge technology in the study and practice of law. Legal informatics also includes the law related to technology, such as intellectual property law, and security. All of the courses for the Certificate in Legal Informatics are offered online.

Certificate Requirements
The following five (5) courses comprise the Certificate in Legal Informatics, for a total of 15 credit hours:

- INFO I330 Legal and Social Informatics of Security (3 cr.)
- INFO I350 Foundations in Legal Informatics (3 cr.)
- INFO I410 Electronic Discovery (3 cr.)
- INFO I470 Litigation Support Systems and Courtroom Presentation (3 cr.)
- NEWM N480 Technology and the Law (3 cr.)

Students who complete all five courses as part of their undergraduate degree will earn a Certificate in Legal Informatics. Students can also earn the Certificate in Legal Informatics as a free-standing certificate. Students must earn a C or higher in all five courses in order to qualify for the Certificate in Legal Informatics.

For additional information, please contact Professor Sara Anne Hook.

Last updated: 02/14/2014

Medical Coding Certificate

Student Consumer Information about this Program

The Medical Coding Certificate is a 26-credit-hour program focusing on pathophysiology, pharmacology, coding, medical reimbursement and basic concepts of health information and is designed to better prepare you to sit for industry standard certifications.

The curriculum includes a unique professional practicum component that integrates classroom instruction with applied, technical experience in an actual healthcare facility.

The program begins each fall. Courses may be taken part-time or full-time, and all courses may be completed via distance education (with the exception of the professional practicum).

Credit earned for the certificate may be applied toward a bachelor's degree in Health Information Administration (application and acceptance into the HIA program required). Graduates are also eligible to seek the Certified Coding Associate (CCA) credential offered by the American Health Information Management Association (AHIMA).

Admission and Requirements
Prospective students must first be admitted to IUPUI as an undergraduate student. You must also acquire knowledge of anatomy, physiology and database design through the completion of designated prerequisites with a minimum grade of C (2.0). Students must achieve a minimum cumulative G.P.A. of 2.5 to begin courses.

Prerequisites (14-16 cr.)

- BIOL N261 Human Anatomy (5 cr.) **and** BIOL N217 Human Physiology (5 cr.)
  OR
- BIOL N212/213 Human Biology I (4 cr.) **and** BIOL N214/215 Human Biology II (4 cr.)
- HIA M110 Computer Concepts for Health Information (3 cr.)
- HIA M330 Medical Terminology (3 cr.)

**** BIOL-N 213 and BIOL-N 215 labs are optional*

Required Courses (26 cr.)

- HIA M325 Healthcare Information Requirements and Standards (3 cr.)
- HIA M326 Lab for HIA M325 (1 cr.)
- HIA M350 Medical Science for Health Information I (3 cr.)
- HIA M355 ICD-9-CM Coding (3 cr.)
- HIA M356 Lab for HIA M355 (1 cr.)
- HIA M450 Medical Science for Health Information II (3 cr.)
- HIA M455 CPT Coding (3 cr.)
- HIA M456 Lab for HIA M455 (1 cr.)
- HIA M461 Release of Information (1 cr.)
- HIA M470 Healthcare Reimbursement Systems (3 cr.)
- HIA M457 Professional Practice in Medical Coding I (4 cr.)

Last updated: 02/14/2014

Five Year Bachelor's and Master's Program

Five Year Bachelor's and Master's Program
A fast track to future success

Earn both a bachelor's and master's in five years and get an accelerated start to your future career

- B.S. Informatics + M.S. Bioinformatics
- B.S. Informatics + M.S. Health Informatics
- B.S. Informatics + M.S. Human-Computer Interaction
- B.S. Media Arts & Science + M.S. Human-Computer Interaction

Informatics and computing professionals are in constant demand within an ever-evolving and growing field. As a result, employers are seeking graduates with the highest qualifications and skill sets to emerge as tomorrow's technology leaders. With these needs in mind, the IU School of Informatics and Computing at IUPUI offers four, **five-year BS+MS degree programs** for top-achieving and motivated students.

These forward-thinking programs combine our very best degree offerings in an accelerated format designed to prepare highly-skilled, marketable and successful graduates. Alumni of our BS+MS programs will be well-equipped not only for success in the computing and information technology fields, but also the healthcare, science, business, interactive media and design industries, among others. Key benefits of our five-year BS +MS degree programs include:

- Save time and tuition
- Stand out in the job market with advanced skills and education
- Increased lifetime earning potential

Programs and Degrees

B.S. Informatics
Use your passion for making a difference through computing to develop high-tech, innovative solutions that change how people use and access information and technology. Informatics is for big picture thinkers who can go beyond just hardware and software to uniquely integrate principles of information systems and design, computing, psychology and sociology. Specialize your education and career path with master's degree in one of the following programs:

- **M.S. Health Informatics:**
  Focus your career on the dynamic field of healthcare systems and information technologies. Health Informatics professionals analyze and protect patient data, increase healthcare efficiencies, transform clinical systems, help shape policies and produce higher quality patient care.
- **M.S. Bioinformatics:**
  Combine informatics and computing with biology and genetics to make an important impact on science, research and medicine. Bioinformaticists utilize computational languages and mathematics to collect and analyze biological data towards the discovery of new advances in health and medicine.
- **M.S. Human-Computer Interaction:**
  Apply the latest research and principles of design, psychology, business, engineering and computing to create innovative and user-friendly technology. Human-Computer Interaction centers on the user experience to create new software designs, interactive applications and other technologies that are intuitive, functional and easy to use.

B.S. Media Arts & Science + M.S. Human-Computer Interaction
Empower your creativity and love of technology to develop and design interactive technologies, software, applications, graphics and other media arts that integrate best practices in usability and user-design. Build a career-launching portfolio that includes dynamic websites and apps, games and software, cutting-edge video and audio, and 3D animations.

Last updated: 02/14/2014

Bachelor of Science in Health Information Management

Bachelor of Science in Health Information Management

Getting Started
To pursue a degree in Health Information Management, you must first apply and be accepted to IUPUI.

You'll then want to meet with an undergraduate advisor to review your plan of study. The program is evenly split between pre-professional coursework and professional program coursework which is normally completed during the junior and senior years.

The Professional Program
Students may begin the HIM Professional Program in either the fall or spring semester. Students must have all of their pre-requisite courses completed prior to starting the professional program. Upon successful completion of the professional program students are eligible to sit for the internationally recognized Registered Health Information Administrator (RHIA) credential.

The Professional Practicum Experience
Our program offers one-of-a-kind experiential learning that gives you a distinct advantage as you begin your career. Students will experience a mentored professional practicum within a variety of healthcare related settings. Practicums are project-based allowing students to integrate classroom based knowledge in a real world setting solving real world problems.

- Admissions
- Plan of Study
- Student Learning Outcomes

Last updated: 04/01/2016

B.S. in Health Information Administration - Plan of Study

B.S. in Health Information Administration - Plan of Study
Below is the plan of study for students beginning in the fall of 2013. Students who began prior to the fall of 2013 should review their plan of study found on the top right hand side of this page. Students are responsible for completing the degree requirements for their particular plan of study. Transfer students should consult a School of Informatics and Computing academic advisor regarding potential course exceptions and/or substitutions. We encourage all students to meet with an academic advisor prior to registration each semester.

The HIA degree consists of 120 credit hours. All courses must be completed with a C or better to count towards degree completion. The professional program may be completed fully online and students may start the professional program in either the fall or spring semester.

Pre-HIA Core (62 cr.)
HIA Pre-requisite Requirements (29 cr.)

- INFO I100 First Year Experience (1 cr.)
- HIA M110 Computer Concepts for Health Information (3 cr.)
- HIA M210 Data Organization & Presentation in Healthcare Environment (3 cr.)
- HIA M300 Database Design for HIA (3 cr.)
- HIA M220 Healthcare Decision Support (3 cr.)
- BUS X100 Intro to Business Administration (3 cr.)
- BUS L203 Commercial Law (3 cr.)
- HIA M270 Foundations & Principles of Health Information Management (2 cr.)
- HIA M330 Medical Terminology (3 cr)
- HIA M275 Effective Communication for the Healthcare Environment (3 cr.)
- NEWM N299 Directed Study (2 cr.)

NOTE: BIOL N212 Human Biology 1 (3 cr.) and BIOL N214 Human Biology 2 (3 cr.) are required but may be applied under the Life and Physical Sciences General

Education Core requirements below. The BIOL N213 and BIOL N215 labs are OPTIONAL.

General Education Core Requirements (30 cr.)

Foundational Intellectual Skills
Students must take 15 credit hours related to Foundational Intellectual Skills. This includes 6 credits related to Core Communication skills, 6 credits in Analytical Reasoning, and 3 credits related to Cultural Understanding. The most recent list of approved classes can be found here:http://go.iupui.edu/gened.

Intellectual Breadth and Adaptiveness
Students must also take 15 credit hours related to Intellectual Breadth and Adaptiveness. This helps to foster the "ways of knowing" that are characteristic of particular fields ranging from science and the social sciences through humanities and arts. This includes 6 credits in the Life and Physical Sciences, and 9 credits distributed across the Arts/Humanities and the Social Sciences. The most recent list of approved classes can be found here:http://go.iupui.edu/gened.

General Electives (3 cr.)
The School of Informatics and Computing will not accept physical education activity courses, musical instrument or voice lesson courses towards elective credit. Students may use any other college level course credit (transferable to IUPUI) towards electives.

Notes:
- This plan of study is subject to revision. Please consult a HIA academic advisor each semester prior to registration.
- The pre-requisite courses total 62 credit hours and must be successfully completed prior to beginning the HIA Professional Program.
- Prerequiste courses must be completed prior to taking the stated course.
- All courses require a minimum grade of a C to be considered as successfully completed and to apply towards graduation.

Professional Program (58 cr.)
Professional program courses are open only to those junior and senior-level students who have successfully completed all pre-Health Information Administration courses and have received a letter of acceptance to the program.

Professional core courses are sequential and must be completed in the order specified during the third and fourth years of study.

First Fall Semester (14 cr.)
- HIA M325 Healthcare Information Requirements and Standards I (3 cr.)
- HIA M326 Lab for M325 (1 cr.)
- HIA M350 Medical Science for Health Information I (3 cr.)
- HIA M355 ICD-9-CM Coding (3 cr.)
- HIA M356 Lab for M355 (1 cr.)
- HIA M370 Health Information Management (3 cr.)

First Spring Semester (16 cr.)
- HIA M322 Hospital Organization and Management (3 cr.)
- HIA M327 Healthcare Information Requirements and Standards II (3 cr.)
- HIA M328 Lab for HIA M327 (1 cr.)
- HIA M445 Medicine and the Law (1 cr.)
- HIA M450 Medical Science for Health Information II (3 cr.)
- HIA M455 CPT Coding (3 cr.)
- HIA M456 Lab for M455 (1 cr.)
- HIA M461 Release of Information (1 cr.)

Second Fall Semester (14 cr.)
- HIA M315 Quantitative Methods and Research (2 cr.)
- HIA M375 Health Information Technology (3 cr.)
- HIA M420 Healthcare Planning and Information Systems (3 cr.)
- HIA M443 Professional Practicum in Health Information Administration I (4 cr.)
- HIA M462 Healthcare Quality Improvement (2 cr.)

Second Spring Semester (14 cr.)
- HIA M400 Health Information Storage/Retrieval (3 cr.)
- HIA M444 Professional Practicum in Health Information Administration II (4 cr.)
- HIA M470 Healthcare Reimbursement Systems (3 cr.)
- HIA M490 Directed Study (1 cr.)
- HIA M499 Health Information Administration Capstone Experience (3 cr.)

Notes:
- This plan of study is subject to revision. Please consult a HIA academic advisor each semester prior to registration.
- All courses require a minimum grade of a C to be considered as successfully completed and to apply towards graduation.
- The HIA Bachelor of Science degree in total equals 120 credit hours.
- The Professional Program courses total 58 credit hours and may be fully completed via online education on a full time or part time basis.

Last updated: 02/14/2014

Undergraduate Programs

Undergraduate Degree Programs
Prior to each semester's enrollment, a faculty member or an academic advisor provides academic counseling for each student in the School of Informatics and Computing. Although academic counseling is intended to provide effective guidance, students are responsible for planning their own programs and for meeting the following degree requirements for graduation.

Students are advised to read bulletin descriptions of all courses selected, paying careful attention to conditions concerning awarding of credit.

The School of Informatics and Computing offers the following undergraduate degrees:

- Health Information Administration
- Informatics

- Media Arts and Science

Bachelor of Science in Informatics

Bachelor of Science in Informatics

Getting Started

To pursue a degree in Informatics, you must first apply and be accepted to IUPUI.

You'll then want to schedule time with one of our undergraduate advisors to review your plan of study and get enrolled in I101 Introduction to Informatics.

I101 Introduction to Informatics is an interactive course using lecture, guest speakers and applied projects to:

- Explore the broad impact of informatics across disciplines
- Build your programming, database and structured query language (SQL) skills
- Identify career and graduate school opportunities
- Introduce you to possible areas of specialization

Area of Specialization
An area of specialization is an integrated program of courses concentrating on the applications – and impact – of informatics within the context of another discipline. Choosing an area of specialization is required, and you may select from virtually any IUPUI program to best customize your degree to your career interests. The most popular specializations include:

- Business
- Computer Information Technology
- Computer Science
- Health (Biology, Health Science and more)
- Human-Computer Interaction
- Law (Legal informatics)
- Media Arts and Science

View our full range of specialization areas.

Capstone Project
From there, you'll complete specialized, hands-on courses that give you the tools and techniques needed as a future computing and technology professional. This includes completion of a capstone project during your senior year.

The capstone represents the culmination of your skills and knowledge within informatics and your chosen area of specialization. It may take the form of a thesis, a research project, a for-credit internship or an applied learning project to develop an information system.

Career Development
And before you graduate, you'll work with our Career Services Office to learn how to job search, assemble a portfolio of your work, pursue internship opportunities and connect with employers.

- Plan of Study
- Areas of Specialization
- Learning Outcomes

Last updated: 02/14/2014

Bachelor of Science in Informatics Plan of Study

Bachelor of Science in Informatics Plan of Study
Below is the plan of study for students beginning in the fall of 2013. Students who began prior to the fall of 2013 should review their plan of study found under "Additional Resources" on the top right hand side of this page. Students are responsible for completing the degree requirements for their particular plan of study. Transfer students should consult a School of Informatics and Computing academic advisor regarding potential course exceptions and/or substitutions. We encourage all students to meet with an academic advisor prior to registration each semester.

Students must earn a C- or higher in each individual course as well as a cumulative grade point average of a 2.0 or higher in order to graduate.

Core A (50 cr.)
- INFO I100 First Year Experience (1 cr.)
- **INFO I101 Introduction to Informatics (4 cr.)**
- INFO I201 Mathematical Foundations of Informatics (4 cr.)
- **INFO I202 Social Informatics (3 cr.)**
- INFO I210 Information Infrastructure I (4 cr.)
- INFO I211 Information Infrastructure II (4 cr.)
- **INFO I270 Introduction to Human Computer Interaction (3 cr.)**
- INFO I303 Organizational Informatics (3 cr.)
- INFO I305 Introduction to Research in Informatics (3 cr.)
- INFO I308 Information Representation (3 cr.)
- INFO I402 Informatics Project Management (3 cr.)
- INFO I421 Applications of Data Mining and Management (3 cr.)
- INFO I453 Computer and Information Ethics (3 cr.)
- NEWM N299 Directed Study (2 cr.)
  *** Beginning Fall 2013 NEWM N299 will replace Y195/Y295*
- INFO Y395 Career Development for Informatics Majors (1 cr.)
- NEWM N221 Media Applications I (3 cr.)
- NEWM N222 Media Applications II (3 cr.)

Note: courses marked in bold can be counted towards a student's general education requirement.

Core B (6 cr.)
Select two informatics courses at the 300 level or above.

Capstone Project (6 cr.)
Each option is two semesters in length, except the Internship option may be earned in one semester if the minimum hours are met (270 total working hours for 6 credit hours).

Select one:

- INFO I491 Capstone Project Internship (3/3 cr.) or
- INFO I492/493 Senior Thesis (3/3 cr.) or
- INFO I494/495 Design & Development of Information Systems (3/3 cr.)

Area of Specialization (15-21 cr.)

Select an area of specialization from our list of approved disciplines or choose any university-approved minor or certificate.

General Education Requirements (30 cr.)

Foundational Intellectual Skills
Students must take 15 credit hours related to Foundational Intellectual Skills. This includes 6 credits related to Core Communication skills, 6 credits in Analytical Reasoning, and 3 credits related to Cultural Understanding. The most recent list of approved classes can be found here: http://go.iupui.edu/gened.

Intellectual Breadth and Adaptiveness
Students must also take 15 credit hours related to Intellectual Breadth and Adaptiveness. This helps to foster the "ways of knowing" that are characteristic of particular fields ranging from science and the social sciences through humanities and arts. This includes 6 credits in the Life and Physical Sciences, and 9 credits distributed across the Arts/Humanities and the Social Sciences. The most recent list of approved classes can be found here: http://go.iupui.edu/gened.

General Electives (7 – 13 cr.)
Choose electives as needed to reach a total of 120 credit hours. The School of Informatics and Computing will not accept physical education activity courses or musical instrument or voice lesson courses towards elective credit. Students may use any other college level course credit (transferable to IUPUI) towards electives.

Last updated: 02/14/2014

Bachelor of Science in Informatics Areas of Specialization

Bachelor of Science in Informatics Areas of Specialization
In addition to taking Informatics courses that address the human and technical dimensions of information technology, students select an area of specialization in order to complete an Informatics degree. An area of specialization is an integrated program of courses (15 – 21 cr.) concentrating on the application and impact of informatics within another discipline.

Over the past few years, Informatics students have most often selected these areas of specialization:

- Biology
- Business
- Computer Information Technology
- Computer Science
- Health Science
- Human-Computer Interaction
- Legal Informatics
- Media Arts & Science

Choosing an area of specialization is required; most students have done so by the beginning of sophomore year. Although the areas listed above are the most popular, you may select approved minors or certificates from other IUPUI programs not listed here. If you are a new student or want more information on an Informatics major with a unique area of specialization, please contact your advisor.

Biology
- BIOL K101 Concepts of Biology I (5 cr.)
- BIOL K103 Concepts of Biology II (5 cr.)
- BIOL K322 Genetics (3 cr.)
- BIOL K341 Principles of Ecology (3 cr.)

In addition, students must take any K-prefixed Biology course of at least 3 credits at the 300 level (or above).

Business
Students may pursue a business minor or a business certificate. Each option requires 21 credit hours of coursework. The major difference between the two options is that the business certificate is available fully online. Details can be found below. Please contact the Kelley School of Business for further information.

- Business Minor
- Business Certificate

Computer Information Technology
Students may complete a Computer Applications Technology Certificate, an IT Certificate for Web Development, an E-Commerce Development Certificate or a Network Security Certificate for the area of specialization.

Another option for an area of specialization is to complete the Minor in Computer Information Technology.

The last option is to complete an area of specialization which is NOT an official minor or certificate through CIT, but will satisfy the School of Informatics and Computing specialization requirement. Students who have completed the core courses in informatics should meet all prerequisites for the first course listed in each CIT area of specialization. Below are the options.

Option I: Systems and Database Development
Prerequisite: CIT 21400 or INFO I308

- CIT 21300 Systems Analysis (3 cr.) [P: CIT 21400 or INFO I308]
- CIT 27000 (Java) or 24200 (ASP.NET) or 21500 (PHP)
- CIT 37400 Systems and Database Analysis (4 cr.) (offered Fall only) [P: CIT 21300]

Select 2 from the following:

- CIT 49900 Database Programming (3 cr.) [P: CIT 200 level programming course]
- CIT 49900 Advanced Database Design [P: CIT 21400 and CIT 3xx00 DB Security]
- 300 Level Programming:
  - CIT 31300 Commercial Website Development [P: 21200 and (CIT 21500 or CIT 24200)
  - CIT 32900 Java Server Pages [P: CIT 27000]
  - CIT 34700 Advanced ASP.NET [P: CIT 24200]
  - CIT 38800 Java II or VB II [P: One 200-level Programming Course]

Option II: Networking Systems
Prerequisite: Completion of 6 hours of Quantitative and Analytical Skills requirement

- CIT 20200 Network Fundamentals (3 cr.) [P: CIT 20700]

- CIT 20300 Communications Security and Network Controls (3 cr.) [P: CIT 20700]
- CIT 20700 Data Communications (4 cr.) [P: CIT 17600]
- CIT 32700 Wireless Communication (3 cr.) [P: CIT 20700]
- CIT 40200 Design and Implementation of Local Area Networks (3 cr.) [P: CIT 20700] or CIT 35600 Network Operating Systems Administration (3 cr.) [P: CIT 20200]

Option III: Programming
Prerequisite: CIT 14000 Programming Constructs Lab or CSCI N335 Advanced Programming: VB

- CIT 24200 Intro to ASP.NET Programming (3 cr.) [P: CIT 14000]
- CIT 27000 Introduction to Java (3 cr.) [P: CIT 14000]
- CIT 34700 Advanced ASP.NET Programming (3 cr.) [P: CIT 24200]
- CIT 38800 Java Programming II (3 cr.) or CIT 32900 Java Server Pages (3 cr.) [P: CIT 27000]

Computer Science
The Computer and Information Science area of specialization requires 20 credit hours and results in the student earning a minor in Computer and Information Science. Students must declare the Minor by contacting a CSCI department advisor, who can be reached at (317) 274-9727. Students must also complete a formal application during their last semester at IUPUI after all courses have been completed.

- CSCI 23000 Computing I (4 cr.)
- CSCI 24000 Computing II (4 cr.)
- CSCI 34000 Discrete Computational Structures (3 cr.)
- CSCI 36200 Data Structures (3 cr.)
- Two electives (6 credit hours) at the 300 – 400 level. These electives are to be taken from the approved list of electives for CSCI majors. Course prerequisites must be fulfilled prior to enrollment in CSCI courses.

At least 9 credit hours of the minor must be taken at IUPUI.

Mathematics 16600 is recommended as pre- or co-requisite to CSA 36200. Students must maintain at least a 2.5 GPA in these courses in order to obtain the minor. A grade of C- or higher is required in each CSCI course.

Health Science
- BIOL-N 212 Human Biology I (3 cr.)
- BIOL-N 213 Human Biology I Lab (1 cr.)
- BIOL-N 214 Human Biology II (3 cr.)
- BIOL-N 215 Human Biology II Lab (1 cr.)
- HIA-M 322 Hospital Organization Management (3 cr.)
- HIA-M 325 Healthcare Information Requirements and Standards (3 cr.)
- HIA-M 330 Medical Terminology (2 cr.)
- HIA-M 420 Healthcare Planning Information Systems (3 cr.)
- HIA-M 445 Medicine and the Law (1 cr.)

Human-Computer Interaction

Those completing this specialization will also receive an undergraduate certificate in Human-Computer Interaction.

- INFO I270 Introduction to HCI Principles & Practices
- INFO I275 Introduction to HCI Theory
- INFO I300 Human-Computer Interaction
- INFO I480 Experience Design and Evaluation of Ubiquitous Computing
- NEWM N450 Usability Principles for New Media Interfaces

Legal Informatics
Legal informatics has been described as “the study of the application of information technologies to the field of law and the use of these technologies by legal professionals.” Therefore, the focus of the legal informatics area of specialization is on the effective use of cutting edge technology in the study and practice of law. Legal informatics also includes the law related to technology, such as intellectual property law, and security. All of the courses in the legal informatics area of specialization are online.

What Are the Career Opportunities in Legal Informatics?
As law firms convert from a paper-based practice to a practice using a full range of software, there are a considerable number of exciting career opportunities for people with informatics and new media degrees. Your work could encompass everything from setting up databases of documents for a trial to running all of the software to manage a law firm’s operational functions, such as time-keeping and billing. It could also include preparing audio, visual and multimedia materials and presentations for accident reconstructions, criminal investigations and to explain the intricacies of machinery and high-tech inventions. Current openings in legal technology feature generous salaries and include the following job titles: case management administrator, director of litigation support, enterprise applications developer, e-discovery associate, project manager, desktop support specialist, records & docket manager, trial presentation analyst, legal technology specialist, training and education manager and web developer. View a list of potential legal informatics-related positions.

Are There Other Career Options?
A student who pursues the legal informatics area of specialization may also choose to continue his or her education by attending law school and becoming an attorney.

The following five (5) courses comprise the legal informatics area of specialization, for a total of 15 credit hours:

Required Courses
- I330 Legal and Social Informatics of Security (3 cr.) – online course
- I350 Foundations in Legal Informatics (3 cr.) – online course
- I410 Electronic Discovery (3 cr.) – online course
- I470 Litigation Support Systems and Courtroom Presentation (3 cr.) – online course
- N480 Technology and the Law (3 cr.) – online course

Students who complete all five courses as part of their undergraduate degree will earn a Certificate in Legal Informatics. Students can also earn the certificate in legal informatics as a free-standing certificate.

For additional information, please contact Professor Sara Anne Hook.

Media Arts & Science
The Media Arts and Science specialization requires 15 credit hours, with at least 12 credit hours at the 200-level or above and at least one course at the 400-level. You must receive a grade of C- or better in each course. Please explore our list of Media Arts and Science courses and our recommended specializations below to help you choose.

Gaming
- N230 Intro to Game Design
- N330 Intermediate Game Design
- N431 Game On!
- N485 Serious Games
- N485 Advanced Game Design

Web Design and Development
- N101 Multimedia Authoring Tools
- N102 Digital Media Imagery
- N215 Online Document Development I
- N315 Online Document Development II
- N413 Advanced Web

Multimedia Storytelling
- N202 Digital Storytelling
- N260 Scriptwriting
- N261 Storyboarding for Multimedia
- *And one of these sequences:*
  - N238 2D Animation and N438 Advanced 2D Animation
  - N332 Sequential Narrative and N432 Advanced Sequential Narrative

3D Graphics
- N243 Introduction to 3D
- N342 3D Animation
- N343 3D Modeling
- N344 3D Production
- *And one of the following:*
  - N440 Digital Video and CGI Special Effects
  - N442 Advanced 3D Animation Techniques
  - N443 Advanced Lighting and Texturing
  - N444 Stereoscopic Production and Display

Video and Audio
- N253 Introduction to Digital Video
- N353 Intermediate Video
- N453 Advanced Video
- *And two of the following:*
  - N255 Introduction to Digital Sound
  - N355 Intermediate Sound
  - N356 Lighting and Field Production
  - N357 Digital Effects

Multimedia Programming
- N321 ActionScript in 3D
- N322 Dynamic Data Applications
- N328 Visualizing Information
- N421 Physical Object Interfaces
- N422 Advanced Interactive Production

Last updated: February, 2014.

Bachelor of Science in Media Arts and Science

Bachelor of Science in Media Arts and Science

Getting Started
To pursue a degree in Media Arts and Science, you must first apply and be accepted to IUPUI.

You'll then want to sit down with one of our undergraduate advisors to review the program's plan of study and find out what courses to take.

You'll likely start with N100 Foundations of New Media, where you'll be introduced to the evolution of digital media and begin exploring your particular interest areas with hands-on projects.

Specialty Areas
From there, you'll take additional core courses and electives in your chosen specialty area(s), becoming fluent in the use of contemporary media tools and project management principles. A specialty area is your opportunity to customize your education in those aspects of media and production best-suited for your career goals. Specialty areas include:

- 3D Graphics
- Gaming
- Video
- Audio
- Design and Development
- Programming

Learn more about our specialty areas.

Capstone Project
With your skills sets firmly in place, you'll design and complete a faculty-mentored capstone project during your final semester. Your capstone project signals your readiness to graduate and represents the culmination of your knowledge and skill within your chosen specialty area(s).

And as a graduating senior, you'll showcase that education and passion to your fellow classmates, family, faculty, alumni and visiting employers during the School of Informatics and Computing Capstone Event held at the close of each semester.

Learn more about upcoming Capstone Events you can attend, as well as examples of past student capstones.

- Plan of Study
- Specialty Areas
- Learning Outcomes

Last updated: 02/14/2014

B.S. in Media Arts and Science - Plan of Study

B.S. in Media Arts and Science - Plan of Study
Degree requirements listed on this page apply to students entering the program on or after fall 2013. Requirements for students matriculating prior to fall 2013 can be found here.

Students in the Media Arts and Science program must successfully complete a minimum of 120 credit hours. Please note that some courses have prerequisites. Transfer students should consult a School of Informatics and Computing academic advisor regarding potential course exceptions and/or substitutions.

Students are responsible for completing the degree requirements listed here. We encourage you to meet with an academic advisor prior to registration each semester. We also advise reviewing the official IUPUI Bulletin prior to registration, paying careful attention to conditions concerning award of credit.

Students must earn a C- or higher in each individual course as well as a cumulative grade point average of a 2.0 or higher in order to graduate.

Core (19 cr.)
- INFO I100 First Year Seminar (1cr.)
- NEWM N100 Foundations of New Media (3 cr.)
- NEWM N101 Multimedia Authoring Tools (3 cr.)
- NEWM N102 Digital Media Imagery (3 cr.)
- NEWM N202 Digital Storytelling (3 cr.)
- NEWM N299 Directed Study (2 cr.)
- NEWM N399 Directed Study III (1 cr.)
- NEWM N499 Capstone (3 cr.)

Note: courses marked in bold can be counted towards a student's general education requirement.

Computing Foundation (3 cr.)
- CSCI N301 Fundamental Computer Science Concepts (3 cr.)

Course of Study (57 cr.)
At least 45 credit hours must be NEWM courses, with at least 12 hours at the 300-level, 12 hours at the 400-level and 21 hours at any level. You may select up to 12 hours from the list of selectives below.

Note: courses marked in bold can be counted towards a student's general education requirement.

Selectives
- **INFO I270 Introduction to Human-Computer Interaction Principles and Practices** (3 cr.)
- **INFO I275 Introduction to Human-Computer Interaction Theory** (3 cr.)
- INFO I300 Human-Computer Interaction (3 cr.)
- INFO I400 Topics in Informatics (3 cr.)
- HER E101 Beginning Drawing I
- HER E102 Beginning Drawing II
- HER E103 Two-Dimensional Design for New Media
- HER E109 Color and Design
- HER E214 Visual Learning
- CSCI N241 Fundamentals of Web Development
- CSCI N341 Client-Side Web Programming
- CSCI N342 Server-Side Web Programming
- CSCI N351 Intro to Multimedia Programming
- CSCI N451 Web Game Development
- CIT 21400 Introduction to Data Management
- CIT 21500 Web Programming
- CIT 27000 Introduction to Java
- CIT 31200 Advanced Web Site Design
- CIT 41200 XML-Based Web Applications
- JOUR J152 Sports in Society
- JOUR J210 Visual Communication
- JOUR J320 Creative Advertising
- MUS Z315 Music for Film
- MUS Z317 Computer Music Composition I
- MUS Z320 Advanced Special Topics Non-Music Majors (*Not all sections of Z320 fulfill the selective requirement. Please check with your advisor before registering.*)

General Education Requirements (30 cr.)

Foundational Intellectual Skills
Students must take 15 credit hours related to Foundational Intellectual Skills. This includes 6 credits related to Core Communication skills, 6 credits in Analytical Reasoning, and 3 credits related to Cultural Understanding. The most recent list of approved classes can be found here: http://go.iupui.edu/gened.

Intellectual Breadth and Adaptiveness
Students must also take 15 credit hours related to Intellectual Breadth and Adaptiveness. This helps to foster the "ways of knowing" that are characteristic of particular fields ranging from science and the social sciences through humanities and arts. This includes 6 credits in the Life and Physical Sciences, and 9 credits distributed across the Arts/Humanities and the Social Sciences. The most recent list of approved classes can be found here: http://go.iupui.edu/gened.

General Electives (up to 11 cr.)
Choose from other IUPUI courses. Please note the School of Informatics and Computing will not count physical education or music performance/lessons courses as general electives.

Last updated: 02/14/2014

B.S. in Media Arts and Science - Areas of Specialization

B.S. in Media Arts and Science - Areas of Specialization
Our program is designed to be flexible, with ample opportunity to concentrate or broaden your studies in one or more specialty areas. Some students develop a passion for a particular specialty, while others aim to become mixed-media virtuosos. Our specialty areas include:

- Storytelling Fundamentals
- Gaming
- Web Design and Development
- Programming
- Audio
- Video
- 3D Graphics
- 21st Century Workplace Skills

Storytelling Fundamentals

Develop your writing, illustration and narrative skills with courses on design, scriptwriting, storyboarding, animation and more.

Note: courses marked in bold can be counted towards a student's general education requirement.

- **N201 Design Issues in Digital Media**
- N202 Digital Storytelling
- N260 Scriptwriting
- N261 Storyboarding for Multimedia
- N238 2D Animation
- N241 Stop Motion Animation
- N285 Interactive Design
- N332 Sequential Narrative
- N432 Advanced Sequential Narrative
- N438 Advanced 2D Animation

Games
Become a future game-maker with coursework in storytelling, programming, character animation and game design/development.

- N230 Intro to Game Design and Development
- N284 Building Physical Prototypes
- N330 Game Design Development and Production
- N335 Character Design and Animation
- N431 Game On!
- N485 Serious Games
- N485 Advanced Game Design

Web Design and Development
Set your sights on mastering the web as you learn advanced fundamentals of web development.

- N215 Online Document Development I
- N315 Online Document Development II
- N413 Advanced Web
- N485 Online Video Streaming
- CSCI/N241 Fundamentals of Web Development

Programming
Apps are everywhere. Here's your chance to become an expert in the development of rich, interactive applications using sophisticated programming and interface design.

- N221 Media Applications I
- N222 Media Applications II
- N321 Actionscript in 3D
- N322 Dynamic Data Applications
- N421 Physical Object Interfaces
- N422 Advanced Interactive Production

Audio
Sound is an important addition to any story, film, animation, game, etc. Learn the latest in sound engineering, composition and design.

- N255 Intro to Digital Sound
- N265 Sound Composition
- N355 Intermediate Sound
- N455 Advanced Sound Design

Video
Explore your inner filmmaker through experiential learning using industry-standard equipment, advanced editing software, lighting techniques and digital effects. Work on videos in multiple genres, including interviews, dramas, documentaries and field productions.

- N253 Intro to Digital Video
- N353 Intermediate Video
- N356 Lighting and Field Production
- N357 Digital Effects
- N440 DV and CGI Effects
- N453 Advanced Video

3D Graphics
Bring your imagination to life using computer-generated imagery (CGI) in movies, games, advertising, scientific illustration and more. Course topics include special effects and 3D modeling, animation and production.

- N243 Introduction to 3D
- N342 3D Animation
- N343 3D Modeling
- N344 3D Production
- N440 DV and CGI Effects
- N442 Advanced 3D Animation Techniques
- N443 Advanced Lighting and Texturing
- N444 Stereoscopic Production and Display

21st Century Workplace Skills
Round out your education with coursework that helps develop soft skills and teaches you the ins-and-outs of the media industry. You'll learn teamwork and how to manage a project from concept through post-production.

- N250 Team Building in Technology
- N290 Creative Concept Development
- N300 Digital Media Production
- N385 Seeing Sideways
- N420 Multimedia Project Development
- I3XX Project Management

Last updated: 02/14/2014

Informatics Minor

Informatics Minor
The undergraduate minor in Informatics allows a student majoring in another subject to receive instruction in the application of informatics tools and principles to that subject area.

Plan of Study Beginning Fall 2012
This plan of study is for students beginning in Fall 2012. Students must earn a C- or higher in each individual course as well as a cumulative grade point average of a 2.0 or higher in order to graduate.

Required Courses (12 cr.)

- **INFO I101 Introduction to Informatics (4 cr.)**
- INFO I210 Information Infrastructure I (4 cr.)
- INFO I211 Information Infrastructure II (4 cr.)

Additional Requirements (9 cr.)
Choose three courses.

- **INFO I202 Social Informatics (3 cr.)**
- **INFO I270 Introduction to Human-Computer Interaction Principles and Practices (3 cr.)**
- **INFO I275 Introduction to Human-Computer Interaction Theory (3 cr.)**

- INFO I300 Human Computer Interaction (3 cr.)
- INFO I303 Organizational Informatics (3 cr.)
- INFO I305 Introduction to Research in Informatics (3 cr.)
- INFO I308 Information Representation (3 cr.)
- INFO I330 Legal and Social Informatics of Security (3 cr.)
- INFO I350 Foundations in Legal Informatics (3 cr.)
- INFO I399 Current Topics in Informatics (3 cr.)
- INFO I400 Topics in Informatics (3 cr.)
- INFO I402 Informatics Project Management (3 cr.)
- INFO I410 Electronic Discovery (3 cr.)
- INFO I421 Applications of Data Mining and Management (3 cr.)
- INFO I425 Applying Web Services in Information Systems (3 cr.)
- INFO I433 Protocol Design and Analysis (3 cr.)
- INFO I445 Competitive Intelligence for Informatics I (3 cr.)
- INFO I453 Computer and Information Ethics (3 cr.)
- INFO I465 Informatics for Social Change (3 cr.)
- INFO I470 Litigation Support Systems and Courtroom Presentations (3 cr.)

Note: courses marked in bold can be counted towards a student's general education requirement.

Plan of Study Prior to Fall 2012
This plan of study is for students who started prior to Fall 2012. A minimum G.P.A. of 2.0 (C) is required in all courses taken for the minor.

Select three
- INFO I101 Introduction to Informatics (4 cr.)
- INFO I202 Social Informatics (3 cr.)
- INFO I210 Information Infrastructure I (4 cr.)
- INFO I211 Information Infrastructure II (4 cr.)
- INFO I308 Information Representation (3 cr.)

Select two
- INFO I300 Human Computer Interaction (3 cr.)
- INFO I303 Organizational Informatics (3 cr.)

Elective
Choose one course from the list of approved electives for the undergraduate Bachelor's Degree in Informatics

Last updated: 02/14/2014

Human Computer Interaction (HCI) Undergraduate Certificate

Human Computer Interaction (HCI) Undergraduate Certificate
Upon completion of the undergraduate Human-Computer Interaction Certificate, students will be able to demonstrate knowledge in the following core competencies:

1. **Basic Human-Computer Interaction Theory and Usability Terms, Principles and Practices**
   - Understanding of human-computer interaction and usability terms, concepts, principles and practices
   - Problem space definition and conceptual models of interactive products
   - User-centered approaches to interaction design as applied to software and the web
   - User profiling, needs and requirements
   - Interface design principles and processes; including related areas of visual design
   - Cognitive and information processing
   - Processes and life-cycles of interactive product design
   - Interactive product evaluation and testing methods, both qualitative and quantitative
2. **Ability to Understand and Demonstrate Basic Design and Evaluation of Interactive Products Up to the High Fidelity Prototype Stage**
   - Interactive product interface design and prototyping based on user/needs assessments
   - Human-computer interaction principles and a user-centered approach to interaction design as applied to software and the Web
   - Apply evaluation and usability testing methods to interactive products to validate design decisions

Last update: 02/04/2014

Undergraduate Informatics Certificate

Undergraduate Informatics Certificate
Upon completion of the undergraduate Informatics Certificate, students will be able to demonstrate knowledge in the following core competencies:

1. **Technical Knowledge:**
   - Define terms and explain basic principles important to the operation of computing systems, as well as fundamental programming concepts
   - Demonstrate knowledge and skills in data representation, models, structures and management
2. **Social Dynamics of Informatics and Information Technology:**
   - Understand and apply major societal trends affecting the development and deployment of modern day IT, such as access, privacy, intellectual property, security and others
   - Critically analyze the impact of IT on individuals, groups and organizations at local and global levels
   - Analyze the social, cultural and organizational settings in which technology solutions will be deployed to achieve successful implementation
3. **Domain-specific* Critical Thinking and Problem Solving Skills:**
   - Define terms and explain basic principles, concepts and theories from another domain or discipline in which IT skills will be applied
   - Access evolving trends in information technology and IT research
   - Synthesize and analyze information and ideas from multiple sources and perspectives
   - Evaluate data, arrive at reasoned conclusions and solve challenging problems

4. **Collaborative Teamwork:**
    - Select and effectively utilize oral, written, visual and quantitative communication skills within the context of an interdisciplinary team
    - Identify and demonstrate the skills, behaviors and attitudes necessary to function as an effective team member, including working cooperatively with diverse group members
    - Articulate legal and ethical issues when using the creative work of others; respect the intellectual property of others
5. **Professional Ethics and Development:**
    - Participate in the development of a personal code of ethics that considers information ethics
    - Articulate principles for resolving ethical conflicts

Last update: 02/04/2014

Undergraduate Legal Informatics Certificate

Undergraduate Legal Informatics Certificate
Upon completion of the undergraduate Legal Informatics Certificate, students will be able to demonstrate knowledge in the following core competencies:

- Students will be prepared to find employment in law firms and legally-related agencies and organizations, such as courts, law schools, non-profit organizations, regulatory agencies, and vendors that develop and sell products for the legal industry. For example, most federal courts in the U.S. use electronic filing, docket control and document retrieval, provide legal documents and information to the public through websites, offer webinars of oral arguments and other proceedings and have sophisticated systems for courtroom presentations. State courts are moving to become what is known as “the electronic courtroom.” The International Legal Technology Association (ITLA) has a long list of job openings that would provide interesting positions for those who complete the Certificate in Legal Informatics. Moreover, *Fifty Legal Careers for Non-Lawyers* describes a number of career opportunities that are encompassed in the legal informatics curriculum.
- Students who are already working as law technology professionals or paralegals will have an opportunity to update their skills and to have a recognizable certificate from a high-quality institution of higher education, namely, the IU School of Informatics, IUPUI.
- Students will be prepared to bring cutting edge technology to law practices and other legally-related organizations and will not require training on these systems beyond a customary orientation program.
- Students will implement systems and technology that will impact the quality and cost of client services, ease the workload and enhance the productivity of busy attorneys and add greater efficiency to a variety of legally-related agencies and organizations.
- Students who want to focus on electronic discovery in their future careers will be able to sit for the electronic discovery certification examinations being developed by the Organization of Legal Professionals (OLP).

Last update: 02/06/2014

Undergraduate Medical Coding Certificate

Undergraduate Medical Coding Certificate
Students completing the Medical Coding Certificate will aquire competencies in several domains.

Domain I - Life Sciences

1. **Anatomy and Physiology**
    - Identify the structures and functions of the human body
    - Locate anatomical online lookups (Adam, etc.)
2. **Medical Terminology**
    - Demonstrate their ability to spell, define, and pronounce medical terms of major disease processes, diagnostic procedures, laboratory tests, abbreviations, drugs, and treatment modalities
    - Demonstrate knowledge of root/suffix/prefix word build concepts and common medical terms
3. **Pathophysiology**
    - Identify specific disease processes by human body system
    - Identify cause, diagnosis, and treatment for each disease process
4. **Pharmacotherapy & Laboratory Findings**
    - Recognize the action of drugs such as: absorption, distribution, metabolism and excretion by the body.
    - Differentiate between drug classifications
    - Identify the most commonly prescribed drugs
    - Describe a formulary
    - Match drugs to common conditions
    - Match drugs to lab findings

Domain II - Information Technology

1. **Introduction to Desktop Applications**
    - Demonstrate keyboard and web access skills
    - Identify concepts related to hardware and software
    - Demonstrate knowledge of Microsoft Office Suite applications
2. **Computer Software Applications in Healthcare**
    - Recognize commonly used software in healthcare
    - Compile public reporting for disease and disease trends
    - Describe how acute care organizations store and retrieve electronic health records
    - Analyze different types of encoder software
    - Analyze online coding tools (coding reference tools)
    - Evaluate Computer Assisted Coding (CAC) software

- Identify the issues involving the migration from a paper-based Health Information Management department to an electronic Health Information Management department
- Summarize acute care environment vendors and their system strengths.
- Evaluate an Electronic Health Record (EHR)
- Evaluate a Personal Health Record (PHR)
- Evaluate Heath Information Exchanges (HIE)

Domain III - Health Information Management

1. **Introduction to Health Information Management**
   - Recognize the content & structure of healthcare data
   - List the content of medical records
   - State the documentation requirements for medical records
   - Identify legal/ethics issues in Health Information Management such as privacy, security, and the Health Insurance Portability & Accountability Act
   - Recognize release of Information issues
   - Identify the Code of Ethics for Health Information Management
2. **Healthcare Delivery Systems**
   - Identify types of healthcare organizations
   - Identify types of healthcare workers
   - Identify healthcare settings that employ coders
   - Understand the types and levels of Healthcare Delivery Systems in the U.S., and of the governing bodies that regulate the Health Information Management processes, and an understanding how eHIM will change this environment
   - Recognize the organization of healthcare delivery
   - Interpret accreditation standards
   - Discuss licensure/regulatory agencies

Domain IV - Clinical Classification Systems

1. **Basic Diagnosis Coding Systems**
   - Demonstrate knowledge of the International Classification of Diseases ICD-9-CM
   - Recognize diagnostic based prospective payment groups such as DRG, APR-DRG, & RUGS.
   - Recognize the International Classification of Diseases ICD-10-CM
   - Recognize the Systematized Nomenclature of Medicine (SNOMED)
   - Demonstrate knowledge of Current Procedural Terminology (CPT)
   - Recognize procedure based payment systems such as Resource Based Relative Value (RBRV), Evaluation &Management and Ambulatory Payment Classification (APC)
   - Identify the impact that coding and sequencing has on reimbursement
2. **Reimbursement Methodologies**
   - Identify Ambulatory Surgery Center reimbursement
   - Identify third party payers
   - Describe billing and insurance procedures
   - Discuss an explanation of benefits
   - Recognize Quality Improvement Organizations (QIO) and their role in the payment process
   - Identify charge master description and maintenance
   - Describe managed care/capitation
   - Recognize compliance issues
   - Audit and monitor the coding process for regulatory compliance

Last updated: 02/04/2014

Bachelor of Science in Health Information Administration

Bachelor of Science in Health Information Administration
Upon graduation, students are eligible for a national registry examination offered through the American Health Information Management Association (AHIMA) and earn the credential of Registered Health Information Administrator (RHIA). This credential exhibits the graduate's expertise in the professional fields of Health Information Management.

Indiana University takes great pride in the fact that graduates of the Health Information Management program have exceeded the AHIMA national average scores on all core competencies on the Registered Health Information Administrator (RHIA) national exam.

Graduates of the Health Information Administration undergraduate program will demonstrate expertise in the following core competencies essential to success as an informatics, computing and information technology professional specializing in health information:

1. **Health Data Management**
   1. Health Data Structure, Content and Standards
   2. Healthcare Information Requirements and Standards
   3. Clinical Classification Systems
   4. Reimbursement Methodologies
2. **Health Statistics, Biomedical Research and Quality Management**
   1. Healthcare Statistics and Research
   2. Quality Management and Performance Improvement
3. **Health Services Organization and Delivery**
   1. Healthcare Delivery Systems
   2. Healthcare Privacy, Confidentiality, Legal and Ethical Issues
4. **Information Technology & Systems**
   1. Information and Communication Technologies
   2. Data, Information, and File Structures
   3. Data Storage and Retrieval
   4. Data Security
   5. Healthcare Information Systems
5. **Organization and Management**
   1. Human Resources Management
   2. Financial and Resource Management

3. Strategic Planning and Organizational Development
4. Project and Operations Management

Last updated: 02/04/2014

Student Learning Outcomes

Student Learning Outcomes

Informatics is an applied, professional computing discipline. It responds to society's need to solve increasingly complex problems in all fields of human endeavor by acquiring, managing and interpreting data. Informatics studies the ways in which people, information and digital technologies interact.

Nearly all fields benefit from the rapidly evolving fields of computing and information science. Informatics graduates solve problems through the application of computing or computation in the sciences, business, the humanities and the arts.

Computing and information technology are evolving rapidly. The student learning outcomes articulated here are central to educating Informatics graduates who possess both the technological and human-centered design skills necessary to develop and deploy useful digital tools that acquire and manage data for informed decision-making. They incorporate intellectual and ethical standards that every School of Informatics graduate should attain.

Bachelor of Science
- Health Information Administration
- Informatics
- Media Arts and Science

Undergraduate Certificate
- Human-Computer Interaction
- Informatics
- Legal Informatics
- Medical Coding

Last updated: 02/06/2014

Bachelor of Science in Informatics

Bachelor of Science in Informatics
Graduates of the Informatics undergraduate program will demonstrate expertise in the following core competencies essential to success as an informatics, computing and information technology professional:

1. **Technical Knowledge:**
   - Demonstrate knowledge and skills in the mathematical and logical foundations of informatics, data representation, models, structures and informatics-centric management
   - Define terms and explain basic principles essential to the design and development of IT and computing systems
   - Acquire fundamental concepts and skills in software architectures and the development of information systems
2. **Social Dynamics of Informatics and Information Technology:**
   - Understand and apply major societal trends affecting the development and deployment of modern day IT, such as access, privacy, intellectual property, security and others
   - Critically analyze the impact of IT on individuals, groups and organizations at local and global levels
   - Apply a user-centered approach to interaction design and product usability, including techniques for quantitative and qualitative testing of interface and interaction design
   - Utilize digital tools to communicate with a range of audiences
   - Analyze the social, cultural and organizational settings in which IT solutions will be deployed to achieve successful implementation
3. **Domain-specific* Critical Thinking and Problem Solving Skills:**
   **Domains are areas of specialization that may include business, science, the arts or humanities.*
   - Define terms and explain basic principles, concepts and theories from another domain or discipline in which IT skills will be applied
   - Deploy IT resources in the context of another domain and/or discipline
   - Synthesize, analyze and conceptualize information and ideas from multiple sources and perspectives
   - Evaluate data, arrive at reasoned conclusions and solve challenging problems
4. **Collaborative Teamwork:**
   - Select and effectively utilize oral, written, visual and quantitative communication skills within the context of an interdisciplinary team
   - Identify and demonstrate the skills, behaviors and attitudes necessary to function as an effective team member, including working cooperatively with diverse group members
   - Acquire the skills to initiate, manage and execute an IT project
   - Articulate legal and ethical issues when using the creative work of others; respect the intellectual property of others
5. **Professional Ethics and Development:**
   - Create a personal code of ethics; articulate principles for resolving ethical conflicts
   - Commit to a regular program of continuing education and lifelong learning that is independent of employer sponsorship
   - Participate in professional organizations that promote responsible computing and service to society

   Last updated: 02/04/2014

Bachelor of Science in Media Arts and Science

Bachelor of Science in Media Arts and Science

Graduates of the Media Arts and Science undergraduate program will demonstrate expertise in the following core competencies essential to success as an informatics, computing and information technology professional specializing in new and interactive media:

1. Understand digital media and its effective use as a form of communication.
2. Communicate ideas effectively in written and oral form to a range of audiences.
3. Work effectively as a member of a team to achieve a common goal.
4. Analyze a problem, identify and evaluate alternatives, plan an appropriate solution.
5. Appreciate the history, theory, and traditions of digital media. Evaluate media from multiple perspectives using the theories, concepts, and language of digital media.
6. Demonstrate mastery of the concepts, techniques, and tools in one or more digital media specialties.
7. Apply knowledge and skills to develop professional quality digital media productions in a timely manner and utilizing best practices and standards.
8. Explain the impact of digital media on individuals, organizations, and society.
9. Acknowledge diverse opinions regarding professional, ethical, legal, and social issues with a global perspective.
10. Appreciate the need for lifelong learning and have a plan for continuing professional development.

Last updated: 02/04/2014

Undergraduate Programs

Undergraduate Programs

The School of Informatics and Computing offers a Bachelor of Science degree in Informatics, a Bachelor of Science degree in Media Arts and Science, and a Bachelor of Science degree in Health Information Administration.

The very nature of these degrees, with the changing technologies and applications, requires that the content of each degree be continuously assessed and revised. Therefore, the faculty of the School of Informatics and Computing will periodically review and revise the curricula to ensure that students are prepared to meet contemporary workplace and intellectual demands.

Please contact the School of Informatics and Computing office, or refer to our Web site at http://soic.iupui.edu/ to confirm current program requirements.

Last Updated: February, 2014.

Clinical Informatics

Clinical Informatics

Student Consumer Information about this Program

Passionate about information technology, workflow redesign and engagement strategies for health care clinicians? This one-year certificate program is designed for licensed physicians, nurses and other clinical health care professionals seeking leadership roles leveraging information systems to

- Improve health care safety and quality
- Maximize workflow efficiencies
- Preserve user and patient satisfaction

New government requirements for electronic health record adoption and utilization will create a shortage of qualified clinical leaders who truly understand information systems and how to implement them to decrease medical errors and adverse events, while improving overall quality and patient outcomes. Completion of this training program prepares the participant for the implementation of certified electronic health record systems.

Training includes two core courses, three specialized courses and a mentored practicum for a total of 18 credit hours to be completed within one year.

Core Curriculum

- INFO B530 Foundation of Health Informatics
- INFO B581 Health Informatics Standards and Terminology

Specialized Courses (Choose 3)

- INFO B505 Informatics Project Management
- INFO B578 Data Analysis
- LIS S644 Consumer Health Informatics
- INFO B641 Business of Health Informatics
- INFO B643 Natural Language Processing
- INFO B535 Clinical Information Systems
- INFO B642 Clinical Decision Support Systems

Mentored Practicum

- INFO B584 Practicum in Health Information Technology

The mentored practicum provides the opportunity to synthesize coursework and demonstrate competency in clinical informatics in the context of a real-world health care environment.

Human-Computer Interaction

Human-Computer Interaction

Student Consumer Information about this Program

The **Graduate Certificate in Human-Computer Interaction** (HCI) program is a 15-credit-hour program focusing on the core theory and best practices of the discipline. All certificate requirements must be completed within three years and with a minimum cumulative G.P.A. of 3.0 (B). Courses with a grade below a B- will not count. All courses may be taken via distance education.

Admission requirements for the certificate program are the same as those for the M.S. program.

Required Core (12 cr.)

Course	Fall	Spring	Online
INFO H541 Interaction Design Practice (3 cr.)	Yes	No	Yes

INFO H563 Psychology of HCI (3 cr.)	Yes	No	Yes
INFO H543 Interaction Design Methods (3 cr.)	Yes	No	Yes
INFO H561 Meaning and Form in HCI (3 cr.)	No	Yes	Yes

Specialization Requirements (3 cr.)

Select one course.

Course	Fall	Spring	Online
INFO H564 Prototyping for Interactive Systems (3 cr.)	No	Yes	Yes
INFO H590 Ubiquitous Computing (3 cr.)	No	Yes	No
INFO H590 Social Computing (3 cr.)	No	Yes	No

Note: *The semester a course is offered can change. The student is responsible for checking the Registrar for confirmation.*

Note: Applicants who have already earned credit for one or more equivalent courses from other institutions and programs may request to apply/transfer up to three credits toward this certificate, subject to approval. No undergraduate courses can be applied to certificate requirements.

Health Information Management and Exchange

Health Information Management and Exchange

Student Consumer Information about this Program

The primary intent of this certificate training program is to produce skilled participants able to improve health care delivery through the timely collection, management, retrieval, exchange and analysis of electronic health information.

Upon successful completion of the program, participants will

- Achieve a fundamental level of understanding of secure biomedical information management and exchange
- Possess an advanced level of proficiency with respect to coding, classification and medical terminologies
- Achieve an advanced level of proficiency with respect to data management, data quality and data exchange.
- Be competitive for careers like “EHR Implementation Analyst” within health care and public health organizations

The Health Information Management and Exchange Specialist program is designed for post-baccalaureate graduates in healthcare degree programs who desire specialized training in information systems, storage and retrieval.

This 18 credit hour program includes five courses and mentored practicum to be completed within one year.

Core Curriculum

- INFO B582 Health Information Exchange
- INFO B583 Security and Privacy Policies and Regulations for Health Care
- INFO B641 Business of Health Informatics
- INFO B530 Foundations of Health Informatics
- INFO B581 Health Informatics Standards and Terminology

Mentored Practicum

- INFO B584 Practicum in Health Information Technology

The mentored practicum provides the opportunity to synthesize the coursework and demonstrate competency in the role of an EHR Implementation Analyst. Students will be able to demonstrate their comprehension, critical thinking, and problem solving abilities alongside faculty and staff in a real-world environment with a proven leader in health information exchange.

Health Information Security

Health Information Security

Student Consumer Information about this Program

This certificate program provides comprehensive knowledge and skill in health information security program development and administration, including policy, procedures, architectures, risk assessment, disaster recovery and business continuity for both health care and public health organizations. Program graduates will be prepared to take on the roles like:

- Information Security Officer
- Health Information Privacy and Security Specialist
- Chief Healthcare and Information Privacy and Security Officers (CISO),

Successful applicants will possess a bachelors or masters degree who are seeking professional education in health IT.

This 18 credit hour program includes six courses and mentored practicum to be completed within one year.

Core Curriculum

- INFO B535 Clinical Information Systems
- INFO B581 Health Informatics Standards and Terminology
- INFO B583 Security and Privacy Policies and Regulations for Health Care

- INFO B590 Topics in Informatics

Mentored Practicum

- INFO B584 Practicum in Health Information Technology

The mentored practicum allows students to integrate classroom training with real-world experiences. Depending upon the venue chosen, this practical experience may include:

- Working alongside faculty/staff from the Indiana School of Medicine and Regenstrief in electronic health care systems
- Developing and integrating security and privacy policies into real health care systems
- Participating in privacy/security projects that involve the Marion County Public Health Department
- Involvement in one of many funded research groups with projects in-progress across the broad spectrum of clinical, public health and health informatics

Health Information Systems Architecture

Health Information Systems Architecture

This certificate program transforms applicants with IT and computer science backgrounds into health information system architects for health information systems design and development. Participants gain both theoretical and practical background in health information system design. Practical experience may come from projects with OpenMRS or commercial health information systems available through Regenstrief Institute and the School of Informatics and Computing.

Upon successful completion of the program, participants will possess the following:

- A basic understanding of health informatics and health information systems
- Practical experience in developing software tools for health information systems
- Excellent knowledge of technical issues associated with health information system development, such as security, client-server application development, health information reporting and data analysis

Qualified applicants are expected to have an undergraduate or graduate degree in Computer Science or in a closely-related field, with a strong programming and database skill set.

This 18 credit hour program includes five courses and mentored practicum to be completed within one year.

Core Curriculum

- INFO B535 Clinical Information Systems
- INFO B581 Health Informatics Standards and Terminology
- LIS S644 Consumer Health Informatics
- INFO B530 Foundations of Health Informatics
- INFO B585 BioHealth Analytics

Mentored Practicum

- INFO B584 Practicum in Health Information Technology

The mentored practicum allows trainees the opportunity to work on real-world health information systems.

Graduate Certificate Programs

Graduate Certificate Programs

In addition to Master's and PhD degree programs, the School of Informatics and Computing offers a number of graduate certificate programs:

- Human-Computer Interaction
- Clinical Informatics (Clinician Leader)
- Informatics for Public Health Professionals (Public Health Leader)
- Informatics in Health Information Management and Exchange (Health Information Management Exchange Specialist)
- Informatics in Health Information Security (Health Information Privacy and Security Specialist)
- Informatics in Health Information Systems Architecture (Programmer and Software Engineer)

Informatics for Public Health Professionals

Informatics for Public Health Professionals

Student Consumer Information about this Program

The Public Health Leader certificate training program prepares public health professionals to develop, procure and implement information systems that meet public health program needs. This includes

- Supporting the development of strategic direction for public health informatics within the enterprise
- Using informatics standards
- Managing and monitoring IT operations
- Evaluating information systems and their applications
- Contributing to the development of interoperable public health information systems
- Implementing solutions that ensure the confidentiality, security, and integrity of captured data while maximizing the availability of information for public health

The scope of this program is designed to meet the core competencies for public health informaticians as described by the Centers for Disease Control and Prevention. Based upon this guidance, ideal eligible students entering this program will have a graduate or doctoral level preparation in public health, including demonstrated course work in epidemiology and data analysis. The requirement for masters or doctorate level preparation may be waived by the demonstration of significant public health experience through years of service and a leadership role at a public health agency. Participants will complete a mentored project in health informatics with a focus on a public health research or community project.

Training includes two core courses, three specialized courses, and a mentored practicum to be completed within one year.

General Course Requirements

18 graduate credit hours are required, including:

- Two core courses (6 credits)
- Three specialization courses (9 credits)
- Practicum (3 credits)

Core Courses (6 credits)
- PBHL P650 Readings in Public Health with subtopic Foundations in Public Health Informatics
- INFO B581 Health Information Standards and Terminology

Specialization (9 credits)
- INFO B505 Informatics Project Management
- INFO B578 Data Analysis
- LIS S644 Consumer Health Informatics
- INFO B535 Clinical Information Systems
- INFO B583 Security and Privacy Policies and Regulations for Health Care

Mentored Practicum (3 credits)
- INFO B584 Practicum in Health Information Technology

The mentored practicum focuses on participation in the development of knowledge management tools for the public health enterprise, ensuring that the knowledge, information, and data needs of the project, program users and other stakeholders are met, applying public health informatics research, and supporting the use of informatics to integrate clinical health, environmental risk and population health.

Additionally, all training participants are expected to participate in the Indiana Center of
Excellence in Public Health Informatics (ICEPHI) monthly work-in-progress seminars.
The ICEPHI brings together the expertise of the following institutions:

- The Polis Center, a national leader in community-based and public health research and applications using geographic information technologies
- The Indiana State Health Department
- The Marion County (Ind.) Health Department
- The IU School of Medicine's Department of Public Health
- The Department of Geography in the School of Liberal Arts at IUPUI
- IUPUI's Center for Health Geographics
- A data visualization group at IU-Bloomington

After training participants complete their mentored practicum, they are required to present their outcomes at a monthly ICEPHI meeting.

Bioinformatics

Bioinformatics
The M.S. in Bioinformatics is a 36-credit-hour program that integrates knowledge from informatics, computation, information systems, mathematics, biology and other related areas. Successful applicants are expected to have an introductory background in both informatics (or computer science) and biology.

The program may be completed in two years by a full-time student. Part-time study options are available for domestic students. However, international students and any students funded directly by the School of Informatics and Computing (in the form of an assistantship or fellowship) must complete the program in two years.

You may choose one of three tracks:

1. Project track
2. Thesis track
3. A non thesis/project track

Project Track

Required Core Courses (18 cr.)
- INFO B519 Introduction to Bioinformatics (3 cr.)
- INFO B532 Seminar in Bioinformatics (3 cr.)
- INFO B556 Biological Database Management (3 cr.)
- INFO B573 Programming for Chem/Life Science (3 cr.)
- INFO B606 Algorithms in Bioinformatics (Previously offered as CSCI 590) (3 cr.)
- INFO B616 Integrative Big Data Analysis (currently offered as B590 High Throughput Data in Biology) (3 cr.)

Advanced Core Courses (12 cr.)
9 – 12 credits from the following 6 courses:

- INFO B529 Machine Learning in Bioinformatics (3 cr.)
- INFO B536 Statistical Methods in Bioinformatics (3 cr.)
- INFO B646 Computational System Biology (3 cr.)
- INFO B619 Structural Bioinformatics (3 cr.)
- INFO B656 Translational Bioinformatics Applications (3 cr.)
- INFO B636 Advanced Genomics and Translational Bioinformatics (3 cr.)

0 – 3 credits from the following 4 courses:

- INFO B535 Clinical Information Systems (3 cr.)
- INFO B642 Clinical Decision Support Systems (3 cr.)
- INFO B590 Next Generation Sequencing (3 cr.)
- INFO B585 BioHealth Analytics (3 cr.)

Project (3 cr.)
- INFO B692 Bioinformatics Project (3 cr.)

Electives (3 cr.)
Students can take other graduate courses either inside or outside the School of Informatics and Computing.

Thesis Track

Required Core Courses (18 cr.)
- INFO B519 Introduction to Bioinformatics (3 cr.)
- INFO B532 Seminar in Bioinformatics (3 cr.)
- INFO B556 Biological Database Management (3 cr.)
- INFO B573 Programming for Chem/Life Science (3 cr.)
- INFO B606 Algorithms in Bioinformatics (Previously offered as CSCI 590) (3 cr.)
- INFO B616 Integrative Big Data Analysis (currently offered as B590 High Throughput Data in Biology) (3 cr.)

Advanced Core Courses (12 cr.)

9 – 12 credits from the following 6 courses:

- INFO B529 Machine Learning in Bioinformatics (3 cr.)
- INFO B536 Statistical Methods in Bioinformatics (3 cr.)
- INFO B646 Computational System Biology (3 cr.)
- INFO B619 Structural Bioinformatics (3 cr.)
- INFO B656 Translational Bioinformatics Applications (3 cr.)
- INFO B636 Advanced Genomics and Translational Bioinformatics (3 cr.)

0 – 3 credits from the following 4 courses:

- INFO B535 Clinical Information Systems (3 cr.)
- INFO B642 Clinical Decision Support Systems (3 cr.)
- INFO B590 Next Generation Sequencing (3 cr.)
- INFO B585 BioHealth Analytics (3 cr.)

Thesis (6 cr.)
- INFO B692 Bioinformatics Thesis (6 cr.)

Non-Thesis or Project Track

Required Core Courses (18 cr.)

- INFO B519 Introduction to Bioinformatics (3 cr.)
- INFO B532 Seminar in Bioinformatics (3 cr.)
- INFO B556 Biological Database Management (3 cr.)
- INFO B573 Programming for Chem/Life Science (3 cr.)
- INFO B606 Algorithms in Bioinformatics (Previously offered as CSCI 590) (3 cr.)
- INFO B616 Integrative Big Data Analysis (currently offered as B590 High Throughput Data in Biology) (3 cr.)

Advanced Core Courses (12 cr.)
9 – 12 credits from the following 6 courses:

- INFO B529 Machine Learning in Bioinformatics (3 cr.)
- INFO B536 Statistical Methods in Bioinformatics (3 cr.)
- INFO B646 Computational System Biology (3 cr.)
- INFO B619 Structural Bioinformatics (3 cr.)
- INFO B656 Translational Bioinformatics Applications (3 cr.)
- INFO B636 Advanced Genomics and Translational Bioinformatics (3 cr.)

0 – 3 credits from the following 4 courses:

- INFO B535 Clinical Information Systems (3 cr.)
- INFO B642 Clinical Decision Support Systems (3 cr.)
- INFO B590 Next Generation Sequencing (3 cr.)
- INFO B585 BioHealth Analytics (3 cr.)

Electives (6 cr.)
Students can take other graduate courses either inside or outside the School of Informatics and Computing.

Last updated: 02/25/2014

Human-Computer Interaction

Human-Computer Interaction

The M.S. in Human-Computer Interaction is a 36-credit-hour program that integrates computing, usability, interface design, the social sciences and other disciplines in the design and development of user-friendly technologies, software and information systems.

As a graduate, you'll be well prepared for a career in private industry or academia, or for admission to the Ph.D. in Informatics program with a human-computer interaction specialization.

The program may be completed in two years by a full-time student. Part-time study options are available for domestic students. However, international students and any students funded directly by the School of Informatics and Computing (in the form of an assistantship or fellowship) must complete the program in two years.

A thesis or applied research project is required to complete your degree.

For students starting Fall 2013

Core (24 cr.)
- INFO H501 Introduction to Informatics (3 cr.)
- INFO H541 Interaction Design Practice (3 cr.)
- INFO H543 Interaction Design Methods (3 cr.)
- INFO H561 Meaning and Form in HCI (3 cr.)
- INFO H563 Psychology of HCI (3 cr.)
- INFO H564 Prototyping for Interactive Systems (3 cr.)
- INFO H590 Ubiquitous Computing (3 cr.)
- INFO H590 Social Computing (3 cr.)

Final Project or Thesis (6 cr.)

Final Project Option
All HCI students must complete a final project by registering for two courses: H680 HCI Professional Practice 1 (offered ONLY in the Fall) and H681HCI Professional Practice 2 (offered ONLY in the Spring). Each course includes a formally scheduled in-class time that students must attend. Students will work on one final project that extends throughout the two courses, i.e., in both fall and spring semesters. Students will receive an official grade at the conclusion of each course/semester. Students are encouraged to propose a project that can be realistically completed by the conclusion of H681, the Spring semester. Incompletes are NOT permitted.

Required Courses
- INFO H680 HCI Professional Practice 1 (3 cr.) – Required for Final Project
  Note: Pre-requisites: INFO H541, H561, H543, H563, and H564
- INFO H681 HCI Professional Practice 2 (3 cr.) – Required for Final Project
  Note: Pre-requisites: INFO H680

Thesis Option
The Thesis option is reserved for students who possess a demonstrated ability to carry out publishable empirical research. Qualified students must find a research-active faculty member willing to advise them on a thesis by the end of the second semester.

Students taking the Thesis option must take and successfully pass I575 Informatics Research Design by

the completion of their first year. They should also take an additional statistics course prior to their final regular semester (see the plan of study). As with the final project, an incomplete will NOT be permitted. It is the student's responsibility to propose a thesis that can be completed within a two-semester timeline. To do this, students MUST provide their primary thesis advisor with a full thesis proposal and outline that includes a timeline for the writing of the thesis.

Required Course
- INFO H694 HCI Thesis (6 cr.)

Electives (6 cr.)

School of Informatics and Computing
- INFO H503 Social Impact of Information Technologies (3 cr.)
- INFO B505 Informatics Project Management (3 cr.)
- INFO H534 Seminar in Human Computer Interaction (1-3 cr.)
- INFO H550 Legal and Business Issues in Informatics (3 cr.)
- INFO H554 Independent Study in Human Computer Interaction (1-3 cr.)
- INFO I575 Informatics Research Design (3 cr.)
- INFO H590 Topics in Informatics (3 cr.)
- LIS S503 Organization and Representation of Knowledge & Information (3 cr.)
- LIS S532 Information Architecture for the Web (3 cr.)
- NEWM N503 Digital Media Application Design Processes (3 cr.)
- NEWM N510 Web-Database Concepts (3 cr.)
- NEWM N501 Foundations of Digital Production (3 cr.)
- NEWM N504 Advanced Interactive Design Applications (3 cr.)

Herron School of Art / Design Thinking & Methods*
- HER V501 Intro to Design Thinking [Fall Wks 1-8 Seminar] (1.5 cr.)
- HER V502 Intro to Human Factors in Design [Fall Wks 1-8 Seminar] (1.5 cr.)
- HER V511 People-Centered Design Research [Fall Wks 1-8 Methods] (1.5 cr.)
- HER V521 Design Analysis [Fall Wks 9-16 Methods] (1.5 cr.)
- HER V531 Design Synthesis [Spring Wks 1-8 Methods] (1.5 cr.)
- HER V541 Design Evaluation [Spring Wks 9-16 Methods] (1.5 cr.)
- HER R511 Studio: Designing Integrated Experiences 1 [Fall] (3 cr.)
- HER R512 Studio: Designing Integrated Experiences 2 [Spring] (6 cr.)

Note: Herron design courses are offered during the day. Full-time graduate students are encouraged to register for these courses as electives.

Social Sciences
- PSY I643 Field Methods and Experiments (3 cr.)
- SOC S551 Sociological Research Methods (3 cr.)
- SOC S659 Qualitative Methods in Sociology (3 cr.)
- ANTH E404 Field Methods in Ethnography (3 cr.)
- X000 Courses from the social sciences: psychology, sociology, anthropology (3 cr.)

Computer Science
- CSCI 507 Object-Oriented Design and Programming (3 cr.)
- CSCI 550 Computer Graphics (3 cr.)
- CSCI 552 Advanced Graphics and Visualization (3 cr.)

For students enrolled prior to Fall 2013

Core (18 cr.)
- INFO H501 Introduction to Informatics (3 cr.)
- INFO H541 Interaction Design Practice (3 cr.)
- INFO H561 Human-Computer Interaction Design II (3 cr.)
- INFO H543 Usability and Evaluative Methods (3 cr.)
- INFO H563 Psychology of HCI (3 cr.)
- INFO H564 Prototyping for Interactive Systems (3 cr.)

Final Project/Thesis (6 cr.)
- INFO H680 HCI Professional Practice 1 (3 cr.) – Required for Final Project
  Note: Pre-requisites: INFO H541, H561, H543, H563, and H564
- INFO H681 HCI Professional Practice 2 (3 cr.) – Required for Final Project
  Note: Pre-requisites: INFO H680

** For the Thesis option (only with special permission), take INFO H694 HCI Thesis (6 cr.) instead of H680/H681. There are additional required courses for students who take the Thesis option (see Plan of Study).*

Electives (12 cr.) Informatics / Media Arts & Science
- INFO H503 Social Impact of Information Technologies (3 cr.)
- INFO B505 Informatics Project Management (3 cr.)
- INFO H534 Seminar in Human Computer Interaction (1-3 cr.)
- INFO H550 Legal and Business Issues in Informatics (3 cr.)
- INFO H554 Independent Study in Human Computer Interaction (1-3 cr.)
- INFO H575 Informatics Research Design (3 cr.)
- INFO H590 Topics in Informatics (3 cr.)
- NEWM N503 Digital Media Application Design Processes (3 cr.)
- NEWM N510 Web-Database Concepts (3 cr.)
- NEWM N501 Foundations of Digital Production (3 cr.)
- NEWM N504 Advanced Interactive Design Applications (3 cr.)

Herron School of Art / Design Thinking & Methods*
- HER V501 Intro to Design Thinking [Fall Wks 1-8 Seminar] (1.5 cr.)
- HER V502 Intro to Human Factors in Design [Fall Wks 1-8 Seminar] (1.5 cr.)
- HER V511 People-Centered Design Research [Fall Wks 1-8 Methods] (1.5 cr.)
- HER V521 Design Analysis [Fall Wks 9-16 Methods] (1.5 cr.)
- HER V531 Design Synthesis [Spring Wks 1-8 Methods] (1.5 cr.)

- HER V541 Design Evaluation [Spring Wks 9-16 Methods] (1.5 cr.)
- HER R511 Studio: Designing Integrated Experiences 1 [Fall] (3 cr.)
- HER R512 Studio: Designing Integrated Experiences 2 [Spring] (6 cr.)

Note: Herron design courses are offered during the day. Full-time graduate students are encouraged to register for these courses as electives.

Library & Information Science
- LIS S505 Organization and Representation of Knowledge & Information (3 cr.)
- LIS S509 Introduction to Research and Statistics (3 cr.)
- LIS S545 Systems Analysis and Design (3 cr.)
- LIS S546 User-centered Database Design (3 cr.)
- LIS S571 Information Architecture for the Web (3 cr.)
- LIS S625 Information in the Social Sciences (3 cr.)

Social Sciences
- PSY I643 Field Methods and Experiments (3 cr.)
- SOC S551 Sociological Research Methods (3 cr.)
- SOC S659 Qualitative Methods in Sociology (3 cr.)
- ANTH E404 Field Methods in Ethnography (3 cr.)
- X000 Courses from the social sciences: psychology, sociology, anthropology (3 cr.)

Computer Science
- CSCI 507 Object-Oriented Design and Programming (3 cr.)
- CSCI 550 Computer Graphics (3 cr.)
- CSCI 552 Advanced Graphics and Visualization (3 cr.)

Last Updated: February, 2014.

Health Informatics

Health Informatics
The School of Informatics and Computing offers a Master of Science in **Health Informatics** to address needs arising from the rapidly changing health care environment. Research and educational programs in medical, nursing, and health informatics are growing at a rapid rate nationally. This can be attributed in large part to the increasing complexity and importance of health care reimbursement, which has created a need for improved classification, storage, and analysis of medical information to establish the best clinical practice and cost efficiency.

Users of health informatics include clinicians, researchers, health care educators, health organization administrators, health policy analysts, health information administrators, quality improvement directors, and chief information officers. Those who are professionally involved in health informatics work in a variety of settings, including acute care hospitals, managed care organizations, consulting firms, claims and reimbursement organizations, accounting firms, home health care agencies, long-term care facilities, corrections facilities, pharmaceutical companies, behavioral health organizations, insurance companies, state and federal health care agencies, and health computing industries.

Informatics is uniquely suited to conduct graduate education in health informatics through its health schools, research centers, and affiliated academic units. The School of Medicine has a long history of fellowship training and research in medical informatics. The School of Nursing, which is the largest in the country, is in the forefront in the development of nursing informatics, with a particular emphasis on consumer health informatics. The School of Library and Information Science offers master's and doctoral degrees in information science, which are distinguished by their sociotechnical orientation.

The school also has a broad research thrust exploring the interconnection of social, behavioral, and technological issues associated with the use of information and communication technologies. Faculty in the department is externally funded to conduct research in medical informatics and bioinformatics. Other academic programs in public health, applied health sciences, and hospital administration offer important supporting course work.

Degree Requirements
The M.S. in Health Informatics is a 36-credit-hour program that integrates knowledge from informatics, healthcare, health information technology and other disciplines to analyze and protect patient data, increase healthcare efficiencies and produce higher quality patient care.

Degree requirements listed on this page apply to students entering the program on or after fall 2012. Requirements for students matriculating prior to fall 2012 can be found here.

Project Track
- INFO B501 Introduction to Informatics (3 cr.)
- INFO B530 Foundations of Health Informatics (3 cr.)
- INFO B535 Clinical Information Systems (3 cr.)
- INFO B581 Health Informatics Standards and Terminology (3 cr.)
- INFO B583 Security and Privacy Policies (3 cr.)
- INFO B642 Clinical Decision Support Systems (3 cr.)
- INFO B505 Informatics Project Management (3 cr.)
- INFO B691 Project in Health Informatics (3 cr.)
- Elective (3 cr.)
- Elective (3 cr.)
- Elective (3 cr.)
- Elective (3 cr.)

Thesis Track
- INFO B501 Introduction to Informatics (3 cr.)
- INFO B530 Foundations of Health Informatics (3 cr.)
- INFO B535 Clinical Information Systems (3 cr.)
- INFO B581 Health Informatics Standards and Terminology (3 cr.)
- PBHL B651 Introduction to Biostatistics (3 cr.)
- INFO B642 Clinical Decision Support Systems (3 cr.)
- INFO I575 Informatics Research Design (3 cr.)
- INFO B691 Thesis (3 cr.)
- Elective (3 cr.)
- Elective (3 cr.)
- Elective (3 cr.)
- Elective (3 cr.)

***Note:** The semester a course is offered can change. The student is responsible for checking the Registrar for confirmation.*

Sample Elective Options
Other elective courses are possible upon approval of the faculty.

- INFO B551 Independent Study
- INFO B578 Data Administration: Clinical Administration Decision Making (3 cr.)
- INFO B582 Health Information Exchange
- INFO B583 Privacy and Security in Health Care
- INFO B590 Topical
- INFO B601 Introduction to Complex Systems
- INFO B605 Social Foundations of Informatics Yes
- INFO H611 Math & Log Foundations of Informatics No
- INFO B617 Informatics in Life Sciences and Chemistry No
- INFO B641 Business of Health Informatics Yes
- INFO B643 Natural Language Processing No
- LIS S644 Consumer Health Informatics Yes
- INFO H543 Usability and Evaluative Methods in Interactive Design Yes
- INFO H563 Psychology of HCI Yes
- INFO H564 Prototyping for Interactive Systems Yes
- GRAD 610 Topic in Translation and Implementation of Research
- GRAD 660 Clinical Research Methods
- GRAD 661 Clinical Trial
- GRAD G667 Tools and Techniques in Translational Research
- GRAD G668 Quantitative Aspects in Translational Research
- GRAD G672 Translational Research and Entrepreneurship
- PHBL P563 Intro to Applied Stat Methods

Last updated: 02/06/2014

MS Degree Programs

MS Degree Programs
Given the rapid and apparently unlimited growth of this new field at all levels of competence, each of the master's degree programs serves students who need education in the use of information technologies to enhance their job performance or employment prospects.

The School of Informatics and Computing offers **Master of Science** degrees in:

- Bioinformatics
- Health Informatics
- Human-Computer Interaction
- Media Arts and Science

All Master of Science degrees require 36 credits, including the completion of common graduate core courses.

To learn more about the M.S. degree programs review the following information:

- Academic Regulations
- Admission to the M.S. Program
- Financial Assistance

Media Arts and Science

Media Arts and Science
The M.S. in Media Arts and Science is a 30-credit-hour professional program emphasizing an applied, project-based approach to the latest in digital media production. The program can be customized with study in other fields, including media production, design thinking and usability analysis, psychology, communication theory, information management, and computing. Projects will be based on your specific area(s) of interest to build a valuable portfolio and advance your career.

The program easily accommodates working professionals with many evening courses and a flexible timetable for degree completion for the part-time student. Full-time students can complete the program in two years.

Core (9 cr.)
- NEWM N500 Principles of Multimedia Technology (3 cr.)
- NEWM N501 Foundations of Digital Production (3 cr.)
- NEWM N503 Digital Media Application Design Processes (3 cr.)

Project or Thesis (6 cr.)
- NEWM N506 Thesis/Project (3 cr.) *Taken each of your final two semesters.*

Electives (15 cr.)

School of Informatics and Computing
Media Arts and Science

- NEWM N502 Digital Media Motion and Simulation Methods
- NEWM N504 Advanced Interactive Design Applications
- NEWM N505 Internship in Media Arts
- NEWM N585 Serious Games
- NEWM N585 Psychology of Media
- NEWM N510 Web Database Concepts
- NEWM N553 Independent Study (1-3 cr.), *can be repeated*

Human-Computer Interaction
Note: completion of this set of courses earns the Graduate Certificate in HCI

- INFO H541 HCI Design 1
- INFO H561 Meaning and Form in HCI
- INFO H543 Interaction Design Methods
- INFO H563 Psychology of HCI
- INFO H564 Prototyping for Interactive Systems

Informatics
- INFO H501 Introduction to Informatics
- INFO B505 Informatics Project Management
- INFO H503 Social Impact of Information Technologies
- INFO B512 Scientific and Clinical Data Management
- INFO H550 Legal and Business Issues in Informatics
- INFO H575 Informatics Research Design
- INFO H590 Topics in Informatics, *can be repeated*
- INFO H600 Professionalism and Pedagogy in Informatics

- INFO H605 Social Foundations of Informatics

Department of Library and Information Science
- LIS S503 Organization and Representation of Knowledge & Information
- LIS S532 Information Architecture for the Web

Herron School of Art, Department of Visual Communication
- HER V501 Intro to Design Thinking
- HER V502 Intro to Human Factors in Design
- HER V511 People-Centered Design Research
- HER V521 Design Analysis
- HER V531 Design Synthesis
- HER V541 Design Evaluation
- HER R511 Studio: Designing Integrated Experiences 1
- HER R512 Studio: Designing Integrated Experiences 2

School of Liberal Arts, Department of Communication Studies
- COMM C500 Advanced Communication Theory
- COMM C510 Health Provider-Consumer Communication
- COMM C526 Effective Media Strategies
- COMM C531 Media Theory and Criticism
- COMM C582 Advanced Intercultural Communication
- COMM C620 Computer-Mediated Communication

Last updated: 04/01/2015

PhD Degree Programs

Ph.D. Programs
The Indiana University School of Informatics and Computing, the first of its kind in the country, was created as a place where innovative multidisciplinary programs could thrive, a program where students can apply the skills of technology to a range of other fields.

All Ph.D. candidates must meet with their academic and/or research advisor for course selection and plan of study.

This program is administered with the approval of Indiana University, Bloomington.

The School of Informatics offers a **Doctoral (Ph.D.)** program with specializations in:

- Bioinformatics
- Health Informatics
- Human-Computer Interaction

Bioinformatics

The **Ph.D. in Informatics with Bioinformatics specialization** is a 90-credit-hour program that integrates knowledge from informatics, computation, information systems, mathematics, biology and other related areas.

The program includes core courses, research rotations, your choice of minor, qualifying examinations and a dissertation.

Degree requirements listed on this page apply to students entering the program on or after fall 2012. Requirements for students matriculating prior to fall 2012 can be found here.

Core Courses (Core A: 18 cr.)
- INFO B519 Introduction to Bioinformatics (3 cr.)
- INFO B573 Programming for Chem/Life Science (3 cr.)
- INFO B556 Biological Database Management (3 cr.)
- INFO B590 Computational Methods for Analyzing High-Throughput Data in Biomedicine (3 cr.)
- CSCI 590 Algorithms in Bioinformatics (3 cr.)
- INFO B600 Professionalism and Pedagogy in Informatics (3 cr.)

Advanced Courses (Core B: 12 cr.)
Select four:

- INFO B529 Machine Learning in Bioinformatics (3 cr.)
- INFO B619 Structural Bioinformatics (3 cr.)
- INFO B646 Computational System Biology (3 cr.)
- INFO B656 Translational Bioinformatics Applications (3 cr.)
- GRAD 652/R607 Biostatistics II / Advanced Statistics (3 cr.)
- INFO B590 Next Generation Sequencing (3 cr.)

Seminar Courses (6 cr.)
- INFO B627 Advanced Seminar I – Bioinformatics (3 cr.)
- INFO B637 Advanced Seminar II – Bioinformatics (3 cr.)

Independent Study/Rotation (6 cr.)
Students are required to take 6 credit hours of rotation as part of the thesis research credits. It is recommended to take these credit hours early in the Ph.D. program by enrolling in INFO B790.

May be taken twice

- INFO B790 Independent Study/Rotation (3 cr.)

Electives
No minimum or maximum credits Students may take other electives (subject to approval) at the graduate level as needed for their specific research.

Minor (minimum 12 cr.)
All students will be required to have an appropriate minor outside or partially inside the School of Informatics and Computing for a minimum 12.0 credit hours. Minors will be selected with the advisor's recommendation. Some appropriate minors would include: biology, chemistry, cognitive psychology, computer science, information science, or statistics. In all cases the number of hours to be included in the minor will be consistent with the requirements of the unit granting the minor. Some of the courses included in the minor may also count toward the student's methodology or other requirements.

Qualifying Examination – Written
All students will take a written qualifying examination that covers the core courses (CORE A and B). The examination will be set by a group of faculty who are familiar with the content of the core courses. Examinations will be offered in August. Examinations must be completed by the beginning of the student's fourth year in the program but can be completed before that time when

the core courses are completed. Students who do not successfully complete the examination can retake the examination a second time.

Qualifying Examination – Oral

1. The oral examination will take place after the student successfully passes the written exam. Students must pass both the written and oral exam before passing on to candidacy. Only two attempts to pass the oral examination will be allowed.
2. The oral exam will be based on the student's response to the written exam and any material from the core courses.

Dissertation Proposal

This is an oral review that covers in-depth knowledge of the student's primary research area and dissertation proposal. The research proposal for dissertation must be approved by the student's research committee. That committee may have the same membership as the program committee or the students may choose different members. The advisor for the dissertation will be a faculty member in the School of Informatics and Computing and a member of the Graduate Faculty. At least one the three members of the committee will be based outside of the school. The student will defend the thesis proposal at a public colloquium in the school. The review should be completed within one-year after passing the Qualifying Examinations.

Dissertation (30 cr. minimum)

- INFO B890 Thesis/Project in Bioinformatics (1-6 cr.)

Please refer to the IUPUI Graduate School Bulletin for more details on the dissertation process.

Last updated: 02/25/2014

Health Informatics

The **Ph.D. in Informatics with a Health Informatics specialization** is a 90-credit-hour program that integrates knowledge from informatics, healthcare, health information technology and other disciplines to analyze and protect patient data, increase healthcare efficiencies and produce higher quality patient care.

The program includes core courses, research rotations, your choice of minor, qualifying examinations and a dissertation.

Foundations in Health Informatics (21 cr.)

- INFO B501 Introduction to Informatics (3 cr.)
- INFO B530 Foundations of Health Informatics (3 cr.)
- INFO B535 Clinical Information Systems (3 cr.)
- INFO I575 Informatics Research Design (3 cr.)
- INFO B581 Health Informatics Standards & Terminology (3 cr.)
- INFO B642 Clinical Decision Support Systems (3 cr.)
- PHBL B651 Introduction to Biostatistics I (3 cr.)

Electives (12 cr.)

Choose four courses.

- INFO B582 Health Information Management (3 cr.)
- INFO B583 Privacy and Security in Health Care (3 cr.)
- INFO B601 Introduction to Complex Systems (3 cr.)
- INFO B605 Social Foundations of Informatics (3 cr.)
- INFO H611 Mathematical Foundations (3 cr.)
- INFO B641 Business of Health Informatics (3 cr.)
- INFO B643 Natural Language Processing (3 cr.)
- INFO B590 Health Analytics (3 cr.)
- LIS S644 Consumer Health Informatics (3 cr.)

Other elective courses are possible upon approval of the faculty advisor.

HCI Courses

- INFO H543 Usability and Evaluative Methods in Interactive Design (3 cr.)
- INFO H563 Psychology of HCI (3 cr.)
- INFO H564 Prototyping for Interactive Systems (3 cr.)

Graduate School Courses

- GRAD 610 Topic in Translation and Implementation of Research (3 cr.)
- GRAD 661 Clinical Trials (3 cr.)
- GRAD 653 Introduction to Applied Statistic Methods (3 cr.)

Required Ph.D. Specific Courses (9 cr.)

- INFO B600 Professionalism and Pedagogy in Informatics (3 cr.)
- PBHL P652 Introduction to Biostatistics II (3 cr.)
- GRAD 660 Clinical Research Methods (3 cr.)

Required Seminar Courses (6 cr.)

- INFO B667 Seminar in Health Informatics I (3 cr.)
- INFO B668 Seminar in Health Informatics II (3 cr.)

Required Independent Study/Rotation (6 cr.)

May be taken twice

- INFO B790 Independent Study/Rotation (3 cr.)

Minor (12 cr.)

All students will be required to have an appropriate minor outside or partially inside the school. Minors will be selected with the advisor's recommendation. The selected minor should be appropriate to the student's choice of sub discipline within informatics. Some appropriate minors would include biology, chemistry, cognitive psychology, computer science and information science. In all cases the number of hours to be included in the minor will be consistent with the requirements of the unit granting the minor.

Qualifying Examinations

Written Exam

All students will take a written qualifying examination that covers the (1) core courses of the Master In Health Informatics Program and (2) critical review of Health Informatics Research. The examination will be set by a group of faculty who are familiar with the content of the core courses. Examinations will be offered in August. Examinations must be completed by the beginning of the student's third year in the program, but can be completed before that time when the core courses are completed. Students who do not successfully complete the examination can retake the examination a second time.

Oral Exam

The oral examination will take place after the student successfully passes the written exam. Students must

pass both the written and oral exam before passing on to candidacy. Only two attempts to pass the oral examination will be allowed.

The oral exam will be based on the student's response to the written exam and any material from the core courses.

Dissertation

Proposal (Required)
This is an oral exam that covers in-depth knowledge of the student's primary research area and dissertation proposal. The research proposal for dissertation must be approved by the student's research committee. That committee may have the same membership as the program committee or the students may choose different members. The advisor for the dissertation will be a faculty member in the School of Informatics and Computing and a member of the Graduate Faculty. At least one the three members of the committee will be based outside of the school. The student will defend the thesis proposal at a public colloquium in the school. The examination should be completed within one-year after passing the Qualifying Examinations. Only two attempts to pass this examination will be allowed.

Dissertation (21 to 30 cr.)
A written elaboration of significant original research, which must be successfully presented to the research committee in a public defense as described in the Graduate School Bulletin.

- INFO B890 Thesis/Project in Health Informatics (1-12 cr. repeatable)

Please refer to the IUPUI Graduate School Bulletin for more details on the dissertation process.

Last updated: 02/25/2014

Human-Computer Interaction

The **Ph.D. in Informatics with a Human-Computer Interaction** specialization is 90-credit-hour program that integrates computing, usability, interface design, the social sciences and other disciplines in the design and development of user-friendly technologies, software and information systems.

The program includes core courses, research rotations, your choice of minor, qualifying examinations and a dissertation.

Core A (15 cr.)
- INFO H541 Interaction Design Practice (3 cr.)
- INFO H543 Interaction Design Methods (3 cr.)
- INFO H563 Psychology of Human-Computer Interaction (3 cr.)
- INFO H564 Prototyping for Interactive Systems (3 cr.)
- INFO H590 Ubiquitous Computing (3 cr.)

Core B (12 cr.)
- INFO H501 Introduction to Informatics (3 cr.)
- INFO H600 Professionalism and Pedagogy in Informatics (3 cr.)
- INFO H624 Advanced Seminar I in Human-Computer Interaction (3 cr.)
- INFO H634 Advanced Seminar II in Human-Computer Interaction (3 cr.)

Research Rotation (6 cr.)
- INFO H790 Research Rotations (6 cr.)

Research Theory/Methods (9 cr.)
- INFO I575 Informatics Research Design (3 cr.)

Besides I575, two additional courses in research methods are required to better prepare you in the necessary theory, knowledge and techniques of quantitative and qualitative methodologies. These courses may be taken from programs outside the School of Informatics and Computing, such as the social sciences (e.g., psychology, anthropology, sociology, or communication). See the plan of study document for recommended research methods courses.

Electives (9 – 18 cr.)
You may take other electives (subject to approval) at the graduate level as needed for your specific research. View the plan of study for more information.

Minor (12 cr.)
You must complete a minor within a domain appropriate to your choice of specialization and/or research area. All courses must be graduate-level and outside the School of Informatics and Computing.

Qualifying Examinations
1. **Written Exam** – You must successfully complete a written qualifying examination by the end of the program's second year. The exam is established by faculty and covers subject matter taken in the program's core courses. The exam may be retaken once.
2. **Oral Exam –** An oral examination takes place within weeks after successful completion of the written exam. You must pass both the written and oral exam before passing on to Ph.D. candidacy. The oral exam is based on the student's response to the written exam and core course material. The exam may be retaken once.

Guide to the HCI PhD Qualifying Exams

Dissertation
A dissertation is a written elaboration of original research that makes creative contributions to your chosen area of specialization. Students will enroll multiple times in INFO H890 Thesis Readings and Research (1-12 cr.) as you work to complete your dissertation. All requirements must be completed within seven years of passing the qualifying exams. The dissertation process includes the following components:

1. **Proposal** – This is an in-depth oral review undertaken by students who have made significant progress in their research. The proposal will be defended at a public colloquium. You must complete the proposal within one year of passing the qualifying exams.
2. **Defense** – You must defend your dissertation in an open seminar scheduled when doctoral research is almost complete.

Please refer to the IUPUI Graduate School Bulletin for more details on the dissertation process.

Last updated: 02/25/2014

Graduate Degree Programs

Graduate Programs

The School of Informatics and Computing offers **Master of Science** degrees in:

- Bioinformatics
- Health Informatics
- Human-Computer Interaction
- Media Arts and Science

All Master of Science degrees require 36 credits, including the completion of common graduate core courses.

Through its Department of Library and Information Science, the school also offers a **Master of Library Science**.

The School of Informatics and Computing also offers a **Doctoral (Ph.D.)** program with specializations in:

- Bioinformatics
- Health Informatics
- Human-Computer Interaction

All Ph.D. candidates must meet with their academic and/or research advisor for course selection and plan of study.

Finally, the School of Informatics and Computing offers a number of **Graduate Certificate Programs**:

- Human-Computer Interaction
- Clinical Informatics (Clinician Leader)
- Informatics for Public Health Professionals (Public Health Leader)
- Informatics in Health Information Management and Exchange (Health Information Management Exchange Specialist)
- Informatics in Health Information Security (Health Information Privacy and Security Specialist)
- Informatics in Health Information Systems Architecture (Programmer and Software Engineer)

Certificate in Human-Computer Interaction

Certificate in Human-Computer Interaction
Graduates of the Human-Computer Interaction Graduate Certificate program will demonstrate expertise in the following core competencies essential to success:

1. Basic HCI theory, terms, principles, and conceptual models
2. User-centered design theory and practices related to interaction design
3. HCI design and development processes and life-cycle
4. User profiling to interaction design (needs and requirements)
5. System requirements and product assessments
6. Interface design principles and processes
7. Product usability evaluations and testing methods
8. The purpose of the graphic user interface
9. Usability theory, terms, and the applied techniques
10. Principles of the interface design and prototyping processes
11. Interface grids and typographical devices
12. Information architecture and content management
13. Classic user testing theory and tools
14. Advanced user requirements and profiling
15. Interface design standards / guidelines for cross cultural and disabled users
16. Interaction design styles and choosing interaction devices and elements
17. Develop an evaluative strategy; planning who, what, when, and where
18. Decide how to collect data and prepare for the final evaluation
19. Analysis and interpretation of the evaluation data
20. Inspect a user interface, including a range of evaluative processes
21. Prototype design basics: theory and practice; including basic terms
22. Psychological and behavioral science of HCI
23. Cognitive architecture, memory, problem-solving, mental models, perception, and action related to HCI
24. Impact the design and testing of interactive technologies

Graduates will also be able to apply HCI theory and principles to product development:

1. Apply HCI principles and a user-centered approach to interaction design
2. Analyze user needs and requirements
3. Design and develop prototypes based on user assessments (needs and requirements), while applying HCI principles and models.
4. Apply evaluation and usability testing methods to interactive products to validate design decisions
5. Develop pre-design and post-design usability testing techniques on the developed Web site
6. Assess user needs and requirements
7. Categorize, design, and develop information in proper architectural structures
8. Create interface design prototypes based on a range of design principles and user data, and user assessments
9. Apply prototype principles and a user-centered approach to interaction design
10. Apply evaluation and usability testing methods to prototypes to validate design decisions and to the Web product to validate design decisions using: a) Classic user testing, and b) Heuristic inspection
11. Analyze test data and write a comprehensive report on the product development process of their redesigned Web site, i.e. of the stages of pre-design, design, and post-design, testing, and data analysis
12. Implement a HCI research proposal, including research questions, collecting the relevant literature and methodology
13. Develop a general framework, with a hierarchy of concepts and topics, including a refinement of the research question
14. Understand and apply the various research methods regarding qualitative and quantitative data

Last updated: 02/04/2014

Certificate in Informatics in Health Information Management and Exchange

Certificate in Informatics in Health Information Management and Exchange
Individuals graduating from this program will support the collection, management, retrieval, exchange, and/or analysis of information in electronic form, in healthcare and public health organizations.

1. Understanding Technology and Methodologies for processing data, information and knowledge in Health Care
   - Explain concepts of information and communication technologies.
   - Elaborate basic informatics terminology like data, information, knowledge, hardware, software, networks, information systems, information systems management, databases.
   - Implement standards and terminologies for documenting health events and exchanging protected health information.
2. Information Literacy for Health Care
   - Determine the nature and extent of the information needed to build effective health information exchange services.
   - Propose infrastructure needed for health information exchange effectively and efficiently.
   - Evaluate information and its sources critically and incorporates selected information into health information exchange services.
   - Evaluate outcomes of health information exchange services on health care outcomes.
3. Information Management
   - Verbalize the importance of health information exchange to health care outcomes.
   - Have knowledge of various types of health information exchange services.
   - Assure confidentiality of protected patient health information when using health information exchange.
   - Assure access control in the use of health information exchange.
   - Assure the security of health information exchange.
   - Possess the skills as outlined in supportive functions component of the HL7 model applicable to health information exchange.
   - Understand the principles upon which organizational and professional Health Information System for providers and consumers are based.

Last updated: 02/04/2014

Certificate of Informatics in Health Information Security

Certificate of Informatics in Health Information Security

Graduates of the Graduate Certificate in Informatics in Health Information Security program will be qualified to serve as institutional/organizational information privacy or security officers:

1. Understanding Technology and Methodologies for Processing Information in Healthcare:
   - Explain concepts of information and communication technologies
   - Analyze network service management (i.e. DNS/DHCP, web, email, spam filtering, resource sharing, database, directory services and authentication), network communication and security (i.e. network devices, firewalls, intrusion detection systems, and incident response/forensics), and administration (i.e. shell scripting, documentation/request management, policy and procedure management, data center considerations, and virtualization)
   - Implement standards and terminologies for maintaining privacy and security of protected health information
2. Information Literacy for Healthcare:
   - Determine the nature and extent of the privacy and security needed to protect health information
   - Propose infrastructure needed to safeguard protected health information effectively and efficiently
   - Evaluate administrative, technical and physical safeguards critically
   - Access privacy and security regulations for healthcare information transactions including policy, procedures, guidelines, security architectures, risk assessments, disaster recovery, and business continuity; particular attention given to the Health Insurance Portability and Accountability Act (HIPAA) and the Health Information Technology for Economic and Clinical Health (HITECH) Act
3. Information Management:
   - Verbalize the importance of health information exchange to healthcare outcomes
   - Have knowledge of various types of health information exchange services
   - Assure confidentiality of protected patient health information when using health information exchange
   - Assure access control in the use of health information exchange
   - Assure the security of health information exchange
   - Possess the skills as outlined in supportive functions component of the HL7 model applicable to health information exchange
   - Understand the principles upon which organizational and professional health information systems for providers and consumers are based

Last update: 02/04/2014

Certificate of Informatics in Health Information Systems Architecture

Certificate of Informatics in Health Information Systems Architecture
Graduates of the Graduate Certificate in Informatics in Health Information Systems Architecture will be the architects and developers of advanced health IT solutions. These individuals will be cross-trained in IT and health domains, thereby possessing a high level of familiarity with health domains to complement their technical skills in computer and information science:

1. Understanding Technology and Methodologies for Processing Information Healthcare:
    - Explain health informatics and design and develop health information systems
    - Recommend usability and usefulness measures to evaluate health information systems
    - Discern principles of informatics that govern communication systems, health decisions, information retrieval, telemedicine, bioinformatics and evidence-based medicine, as well as ways in which information science and computer technology can enhance evidence-based practice in healthcare
2. Information Literacy for Health Care:
    - Inspect solutions for management and mining of data generated in scientific laboratories and clinical trials for data mining and knowledge discovery, which include knowledge discovery techniques and databases, extraction of data/ metadata stored in data warehouses using Storage Area Networks and dealing with issues of handling this data
    - Design approaches to access needed information effectively and efficiently
    - Analyze the principles and methodologies underlying most standards for healthcare data interchange and practical issues of reading and understanding specifications, implementing and translating between standards
3. Information Management:
    - Analyze theoretical and practical models for the delivery of consumer health information and implement them in the design and development of consumer health information resources

Last updated: 02/04/2014

Certificate in Clinical Informatics

Certificate in Clinical Informatics
Graduates of the Graduate Certificate in Clinical Informatics program will be able to lead the successful deployment and use of health IT to achieve transformational improvement in the quality, safety, outcomes and, thus, the value of health services in clinical areas:

1. Understanding technology and methodologies for processing data, information and knowledge in Health Care
    - Explain concepts of information and communication technologies.
    - Integrate data from disparate systems found in hospitals and clinics.
    - Implement standards and terminologies for documenting health events and exchanging protected health information.
2. Information Literacy for Health Care
    - Determine the nature and extent of the information needed.
    - Access needed information effectively and efficiently.
    - Evaluate outcomes of the use of information in clinical practice.
3. Information Management
    - Verbalize the importance of health information systems to clinical practice.
    - Have knowledge of various types of health information systems and their clinical and administrative uses.
    - Assure confidentiality of protected patient health information when using health information systems.
    - Assure access control in the use of health information systems
    - Assure the security of health information systems

Last updated: 02/04/2014

Certificate in Informatics for Public Health Professionals

Certificate in Informatics for Public Health Professionals
Individuals graduating from this program will be able to lead the successful deployment and use of health IT to achieve transformational improvement in the quality, safety, outcomes, and thus in the value of public health services.

1. Understanding Technology and Methodologies for processing data, information and knowledge in Healthcare
    - Explain concepts of information and communication technologies.
    - Integrate data from disparate systems such as clinical data, surveillance data, etc. for public health decision making.
    - Implement standards and terminologies for documenting public health events and exchanging protected health information for improved surveillance.
2. Information Literacy for Healthcare
    - Determine the nature and extent of the information needed for public health decisions.

- Access needed information effectively and efficiently.
- Evaluate outcomes of the use of information in public health.

3. Information Management
   - Verbalize the importance of health information systems to public health surveillance.
   - Have knowledge of various types of health information systems and their potential use in public health surveillance.
   - Evaluate when confidentiality of protected patient health information is superseded by public health needs.
   - Assure access control in the use of health information systems for public health needs.
   - Assure the security of health information systems.

Last updated: 02/04/2014

Student Learning Outcomes

Graduate Student Learning Outcomes
Informatics is an applied, professional computing discipline. It responds to society's need to solve increasingly complex problems in all fields of human endeavor by acquiring, managing and interpreting data. Informatics studies the ways in which people, information and digital technologies interact.

Nearly all fields benefit from the rapidly evolving fields of computing and information science. Informatics graduates solve problems through the application of computing to their domains of expertise.

Computing and information technology are evolving rapidly. The student learning outcomes articulated here are central to educating Informatics graduates who possess both the technological and human-centered design skills necessary to develop and deploy useful digital tools that acquire and manage data for informed decision-making. They incorporate intellectual and ethical standards that every School of Informatics and Computing graduate should attain.

Master of Library Science
- Master of Library Science

Master of Science
- Bioinformatics
- Health Informatics
- Human-Computer Interaction
- Media Arts and Science

Doctor of Philosophy
- Bioinformatics
- Health Informatics
- Human-Computer Interaction
- General PhD Learning Outcomes

Graduate Certificate
- Clinical Informatics
- Human-Computer Interaction
- Informatics in Health Information Management and Exchange
- Informatics in Health Information Security
- Informatics in Health Information Systems Architecture
- Informatics for Public Health Professionals

Last updated: 02/06/2014

Master of Science in Bioinformatics

Graduates of the Bioinformatics program will demonstrate expertise in the following core competencies essential to success:

1. Extract information from different types of bioinformatics data (gene, protein, disease, etc.) including their biological characteristics and relationships.
2. Employ different data representation models and formats used for bioinformatics data representation including markup languages, such as SBML and CellML, and ontologies, such as GO ontology.
3. Apply the different approaches used for data integration and data management, including data warehouse and wrapper approaches.
4. Master computational techniques and diversified bioinformatics tools for processing data including statistical, machine learning and data mining techniques.
5. Analyze processed data in particular with the support of analytical and visualization tools.
6. Carry out bioinformatics research under advisement including systems biology, structural bioinformatics and proteomics.
7. Interact with non-bioinformatics professionals, such as biologists and biomedical researchers in order to better understand their bioinformatics needs for better support and service delivery.
8. Design and develop bioinformatics solutions by adapting existing tools, designing new ones, or a combination of both.

Last updated: 02/04/2014

Master of Science in Human-Computer Interaction

Graduates of the Human-Computer Interaction program will demonstrate expertise in the following core competencies essential to success:

1. Human-Computer Interaction Theory and Usability Terms, Principles, and Practices
   - Problem space definition and conceptual models
   - Social mechanisms used in communication
   - User-centered approaches to interaction design
   - User profiling and user needs and requirements
   - Interface design principles and processes
   - Cognitive and information processing
   - Product assessments related to a market analysis
   - Processes and life-cycles of interaction design
   - Interface design and related areas of visual design and aesthetics

- Product evaluation and testing methods, both qualitative and quantitative

2. Develop and Apply Human-Computer Interation Principles and Practices Related to the Design and Evaluation of Interactive Products:
   - Produce interface designs and prototypes based on user and needs assessments.
   - Apply HCI theory, principles, and a user-centered approach to interaction design.
   - Design interactive products up to the prototype.
   - Apply evaluation and usability testing methods to interactive products to validate design decisions.

   Last updated: 02/04/2014

Master of Science in Health Informatics

Graduates of the Health Informatics program will master health informatics knowledge and skills, as well as acquire practical experience in three domains:

1. **Understanding technology and methodologies for processing data, information and knowledge in Health Care**
   - Explain concepts of information and communication technologies.
   - Elaborate basic informatics terminology like data, information, knowledge, hardware, software, networks, information systems, information systems management, databases.
   - Execute queries on large databases using data mining and testing hypothesis approaches.
   - Integrate data from disparate systems found in hospitals and clinics.
   - Implement standards and terminologies for documenting health events and exchanging protected health information.
2. **Information Literacy for Health Care**
   - Determine the nature and extent of the information needed.
   - Access needed information effectively and efficiently.
   - Evaluate information and its sources critically and incorporates selected information into his or her knowledge base and value system.
   - Either individually or as a member of a group, use information effectively to accomplish a specific health care purpose.
   - Propose/justify Decision Support Systems algorithm to support care delivery.
   - Integrate Natural Language Processing (NLP) with standards and terminologies used in healthcare.
   - Evaluate outcomes of the use of information in clinical practice.
3. **Information Management**
   - Verbalize the importance of health information systems to clinical practice.
   - Have knowledge of various types of health information systems and their clinical and administrative uses.
   - Assure confidentiality of protected patient health information when using health information systems.
   - Assure access control in the use of health information systems.
   - Assure the security of health information systems.
   - Estimate the Return of Investment (ROI) of health information technology applications for healthcare.
   - Possess the skills as outlined in direct care component of the HL7 EHRS model, which such as navigation, Decision Support, output reports and more.
   - Understand the principles upon which organizational and professional Health Information System for providers and consumers are based.

   Last updated: 02/04/2014

Master of Science in Media Arts and Science

Graduates of the Media Arts and Science graduate program will demonstrate expertise in the following core competencies essential to success as an informatics, computing and information technology professional specializing in new and interactive media:

1. Design and create digital media products that are targeted to a specific purpose and that meet professional standards for quality.
2. Plan a coordinated collection of multi-media or trans-media communications and/or experiences, using each medium to good advantage.
3. Assess media communications and/or experiences, discriminating among features that influence effectiveness.
4. Recommend strategies, practices, and/or tools appropriate to a problem.
5. Predict future trends and developments in digital media, based on examination of the history, tradition, and current drivers in the field.
6. Communicate in written and oral form to a range of audiences.

Last updated: 02/05/2014

Doctor of Philosophy in Informatics - Bioinformatics

Upon completion of the Bioinformatics PhD program, students will be able to:

1. Analyze different types of bioinformatics data (gene, protein, disease, etc.) including their biological characteristics and relationships.
2. Formulate steps involved in transforming the data to knowledge, as well as introducing different techniques used at each step
3. Impact informatics on other disciplines such as biology from several perspectives including the social and economic aspects.
4. Establish different data representation models and formats used for bioinformatics data representation

including markup languages, such as SBML and CellML, and ontologies, such as GO ontology.
5. Master different approaches used for data integration and data management, including data warehouse and wrapper approaches.
6. Develop computational techniques and employ diversified bioinformatics tools for data processing including statistical, machine learning and data mining techniques.
7. Analyze processed data in particular with the support of analytical and visualization tools.
8. Perform bioinformatics research in area of interest.
9. Interact with non-bioinformatics professionals, such as biologists and biomedical researchers in order to better understand their bioinformatics needs for better support and service delivery.
10. Develop the ability to design and develop bioinformatics solutions by adapting existing tools, designing new ones, or a combination of both.

Last updated: 02/05/2014

Doctor of Philosophy in Informatics - General

Graduates of the Ph.D. in Informatics program will demonstrate expertise in the following core competencies:

1. Identify, discuss, and apply the fundamental concepts, theory and practices in informatics such as information representation and architecture, retrieval, structured query language, information extraction and integration from disparate data sources, information visualization and security, and data mining including the relevant tools and methodologies.
2. Identify and practice the knowledge of beginning statistics, including sampling and correlations, research paradigms such as constructivism and pragmatism, distinctions and limitations of qualitative, quantitative, and mixed method research designs, understanding validity and reliability.
3. Apply research proposals, conduct peer reviews, create an annotated bibliography, create and present a high-level presentation pertaining to research, and use SPSS.
4. Acquire and apply the ability to read and critique scientific articles by analyzing the problem presented, solutions proposed, and critically looking at the solutions and the results, as well as learn how organize and write a scientific article through critical thinking and discussion.
5. Write research proposals by examining NSF and NIH case studies, including style and grant specific requirements.
6. Develop and deliver class-room lectures, including processes for critically evaluating class-room lectures and how to prepare effective teaching materials.
7. Apply research methods and acquire more advanced knowledge in different areas of research through apprenticeship and mentorship.

Concentrations will have the above general outcomes plus additional ones.

Last updated: 2/05/2014

Doctor of Philosophy in Informatics - Human Computer Interaction

Graduates of the Human-Computer Interaction track will gain the additional and specific expertise described below:

1. Identify and explain HCI domain knowledge in the areas of both basic and applied research with considerable depth, including:
   - HCI theory and usability terms, principles and practices
   - Problem space definition and conceptual models
   - Social mechanisms used in communication,
   - User-centered approaches to interaction design
   - User profiling and user needs and requirements
   - Interface design principles and processes, as well as related areas of visual design and aesthetics
   - Cognitive and information processing
   - Product assessments related to a market analysis, as well as processes and life-cycles of interaction design
   - Product evaluation and testing methods, both qualitative and quantitative
2. Identify and apply HCI principles and practices during product design and evaluation (*development and usability testing*) of interactive products, including:
   - Producing interface designs and prototypes based on user and needs assessments
   - Validate design decisions through a user-centered approach to interaction design and the final analysis, evaluation and usability testing methods of interactive products
3. Identify and explain the broader HCI connections and associations among technology, theory, social analysis and application domains to arrive at a set of questions in preparation for final research and dissertation, as well as the broader significance of work within the context of past and current HCI research

Last updated: 02/05/2014

Doctor of Philosophy in Informatics - Health Informatics

Graduates of the Health Informatics track will gain the additional and specific expertise described below:

1. Become skilled in the analysis, design and implementation of information systems that support and expand the delivery of health care
2. Function as a translator between clinicians and information technology personnel
3. Ensure that information systems capture and present critical health information
4. Interact with non-health care professionals, such as computer science, information science, cognitive science and other researchers to better understand

how their knowledge advances health informatics science
5. Demonstrate in-depth knowledge on health informatics research approaches
6. Propose innovative approaches to the development of health informatics knowledge

Last updated: 02/05/2014

Contact Information

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Tuition & Financial Aid

Tuition & Financial Aid
IUPUI is an exceptional value and a world-class institution, recently ranked 8th on the list of Best Public Colleges in the Midwest by *Forbes Magazine* and the Center for College Affordability and Productivity.

And a School of Informatics and Computing graduate degree from Indiana University will make you even *more* valuable with its unique integration of computing, social science and information systems design that can be applied in any number of fields as an industry professional, faculty member or researcher.

The IUPUI Office of the Bursar maintains current tuition and detailed fee information, including a Tuition and Fee Estimator. They also accept several methods for payment designed to make paying for college as convenient as possible.

The Office of Student Financial Services provides current information for costs of attendance for full-time, resident and non-resident graduate students.

International students' costs of attendance are slightly different and include manadatory health insurance. Please consult with the IUPUI Office of International Affairs.

Financial Aid
As a master's or Ph.D. student, you have access to a wide range of financial assistance, including scholarships, grants, loans and work-study that help reduce costs. We encourage you to investigate and pursue all options for which you may be eligible.

The School of Informatics and Computing offers assistantships and fellowships to qualified Ph.D. and master's students. To be automatically considered for such support, you must submit the following by January 15 (Ph.D. students) or March 15 (master's and certificate students):

- A completed application with application fee;
- Your GRE score from within the past five years.

Direct financial support from the School of Informatics and Computing is reserved for qualified, full-time students matriculating in the fall semester. Direct financial support is rarely available for students matriculating in the spring.

To learn more about financial aid opportunities from the university or external sources, such as the federal government, please consult the IUPUI Office of Financial Aid and the IUPUI Graduate Office.

International Students
For information about specific financial resources for international students, please contact the IUPUI Office of International Affairs.

Last updated: 02/11/2014

Graduate Programs

Graduate Programs
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- Media Arts and Science

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The School of Informatics and Computing also offers a **Doctoral (Ph.D.)** program with specializations in:

- Bioinformatics
- Health Informatics
- Human-Computer Interaction

And finally, in addition to Master's and PhD degree programs, the School of Informatics and Computing offers a number of **Graduate Certificate** programs:

- Human-Computer Interaction
- Certificate in Clinical Informatics (Clinician Leader)
- Certificate in Informatics for Public Health Professionals (Public Health Leader)
- Certificate in Informatics in Health Information Management and Exchange (Health Information Management Exchange Specialist)
- Certificate in Informatics in Health Information Security (Health Information Privacy and Security Specialist)
- Certificate in Informatics in Health Information Systems Architecture (Programmer and Software Engineer)

Courses